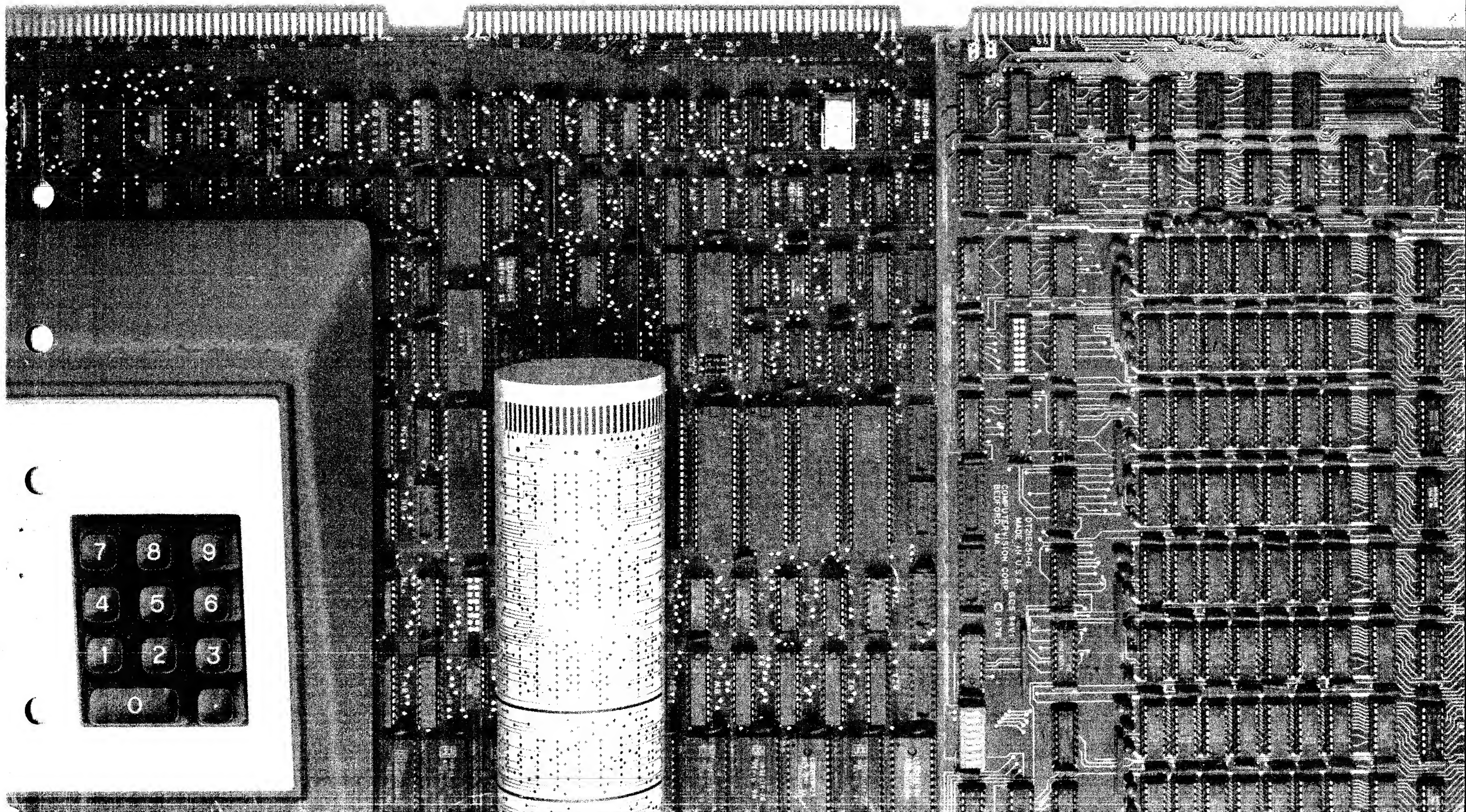


Computervision Graphics Processor (CGP)
(CGP 80/180/100/200)
Logic Diagrams



Computervision Graphics Processor (CGP)

(CGP 80/180/100/200)

Logic Diagrams

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Logic diagrams pertain to:

- CGP 80*
- CGP 180*
- CGP 100 (A, B, and C)
- CGP 200 (A and B)
- CGP 200 (C)*

*Also need EACPU/ICP Logic Diagrams

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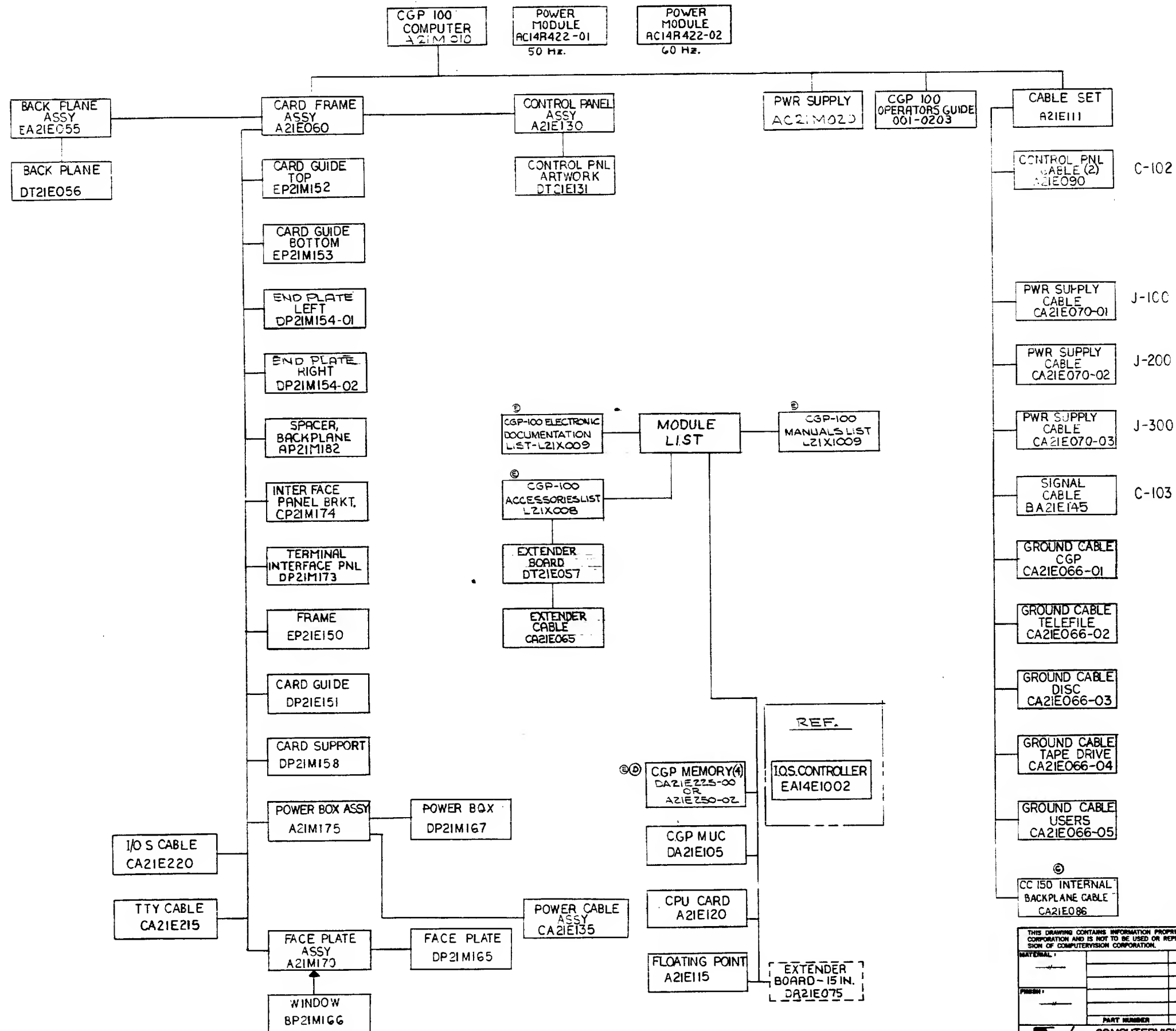
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Introduction

This manual contains the logic diagrams for the current models of the CGP line of Computervision Graphics Processors. This line includes the CGP-100 A, B, and C, CGP-180, and CGP-200 A, B, and C. To use this manual first determine which machine you are working on. Consult the family tree for a listing of boards that are part of that system. Next determine which boards (modules) you are interested in and then refer to the diagrams for the particular module. These are listed in the Table of Contents. The logic diagrams for the Extended Address Central Processing Unit (EACPU) and the Intelligent Control Panel (ICP) are shown in a separate publication "Extended Address Central Processing Unit (EACPU)/Intelligent Control Panel (ICP) Logic Diagrams". Order No. 001-00567.

Section 1
Computervision Graphics Processors (CGP) Family Trees

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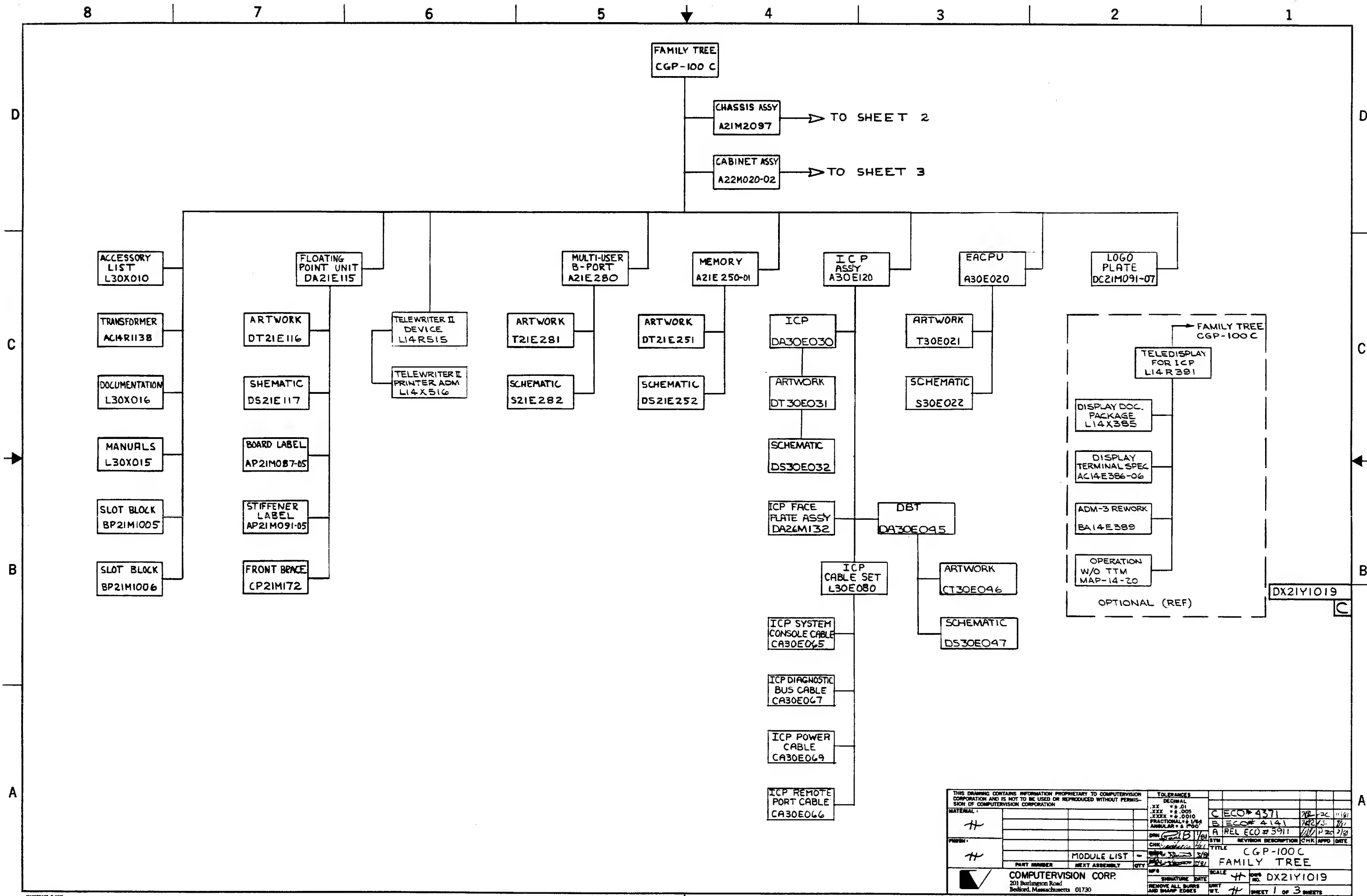
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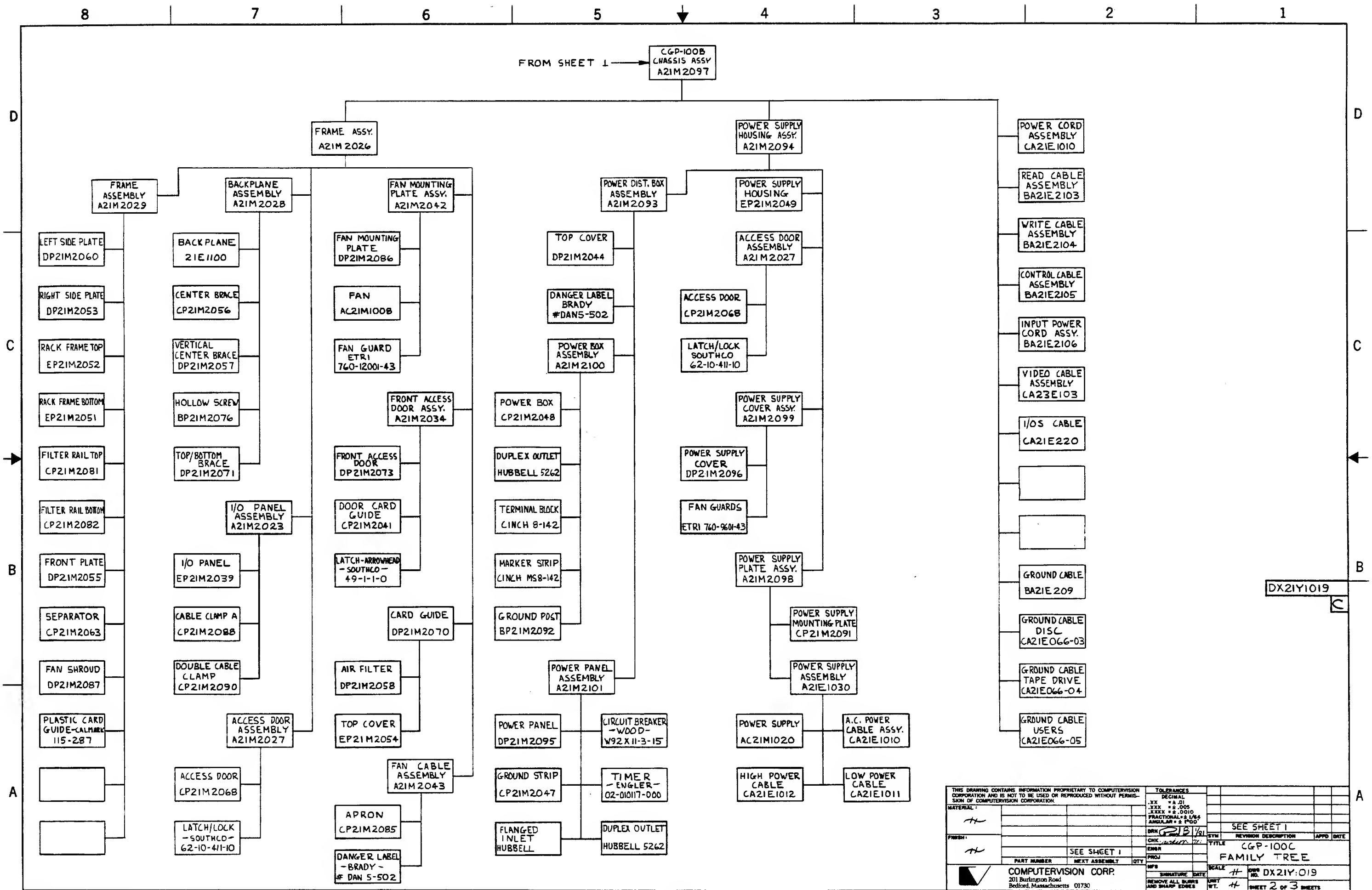
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COMPUTERVISION CORP. SOUTH AVENUE BURLINGTON, MASS. 01803		TITLE FAMILY TREE CGP		DWG NO. DX21Y007	

REV A = REV 4

1-1



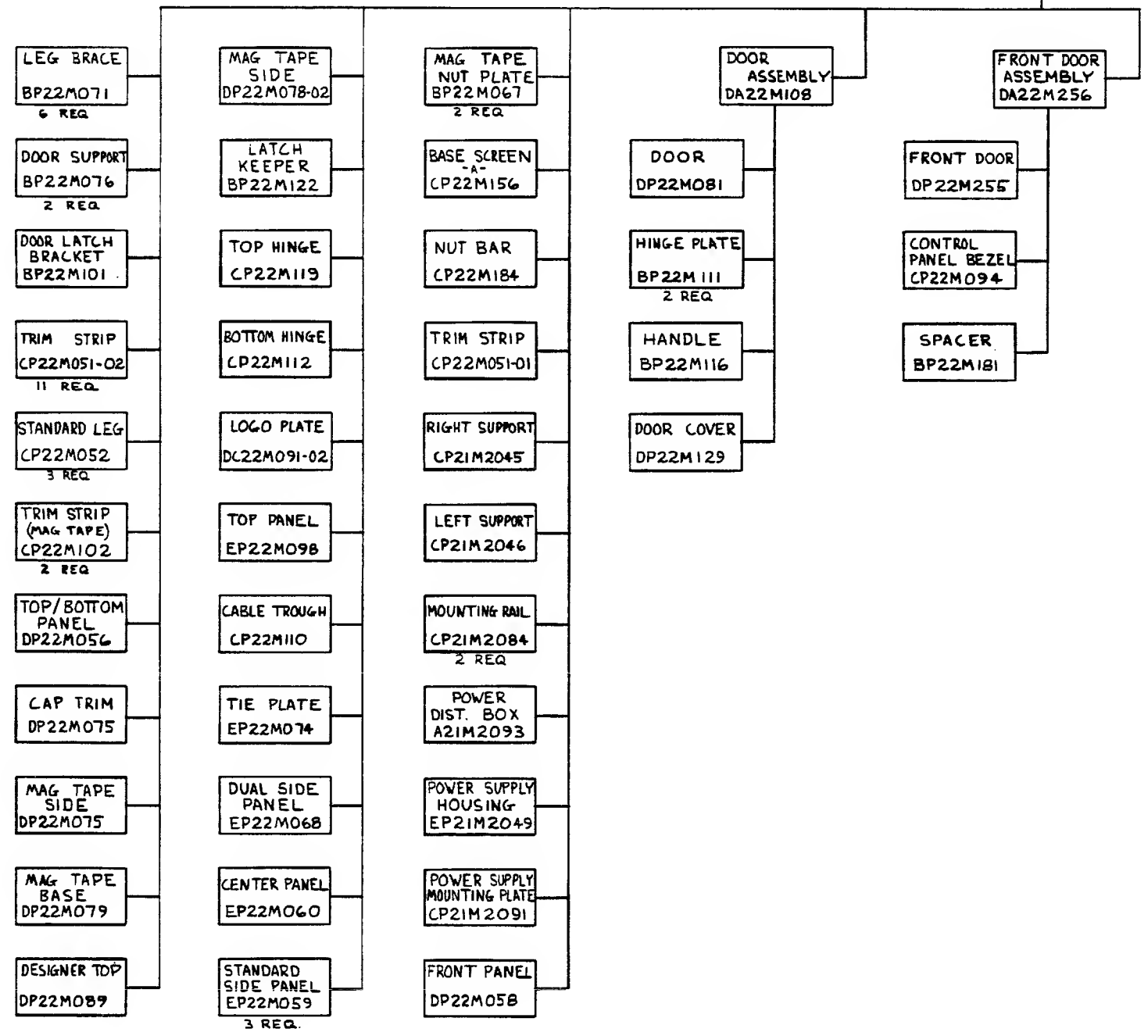


8 7 6 5 4 3 2 1

D
C
B
A

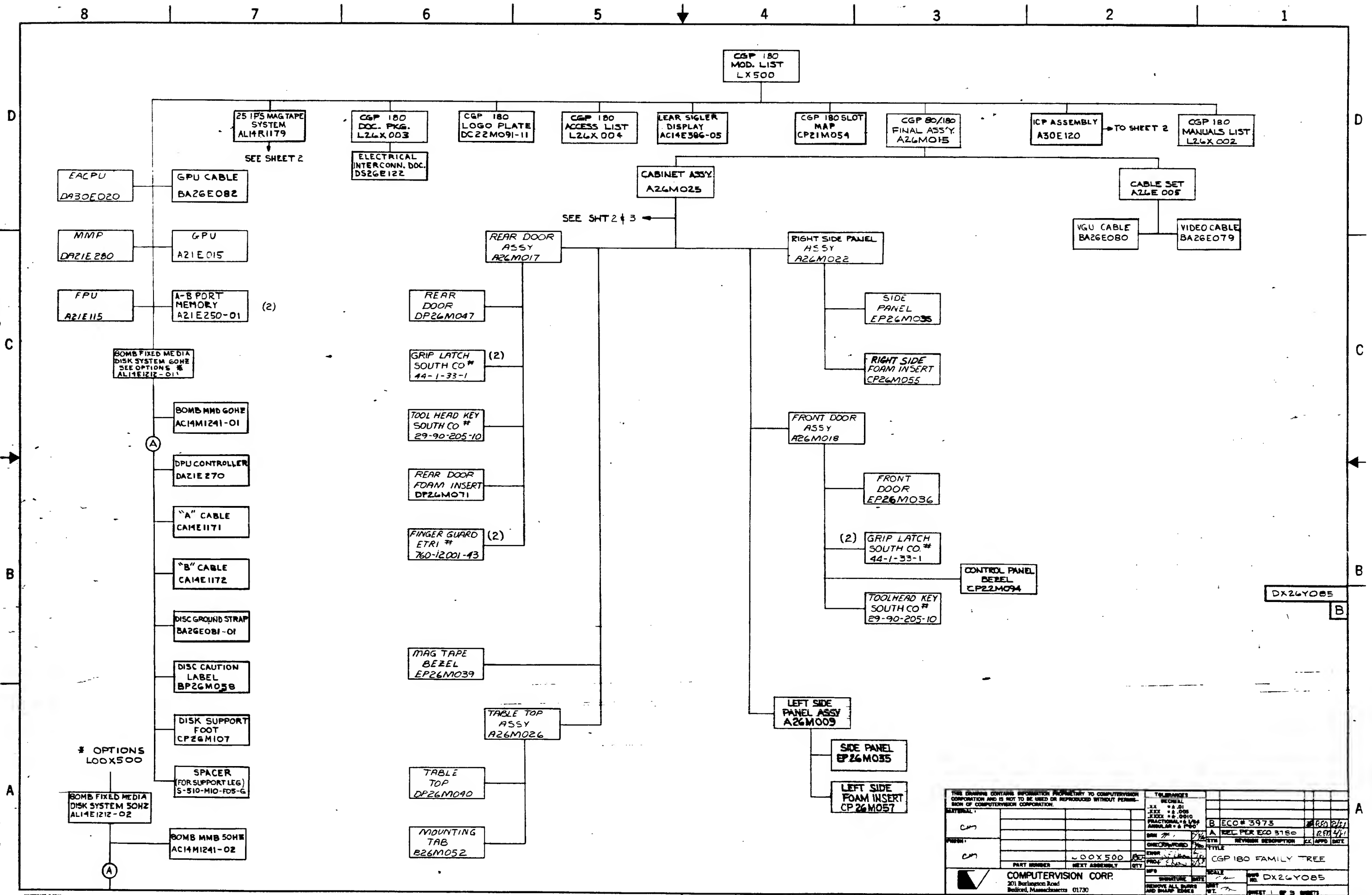
D
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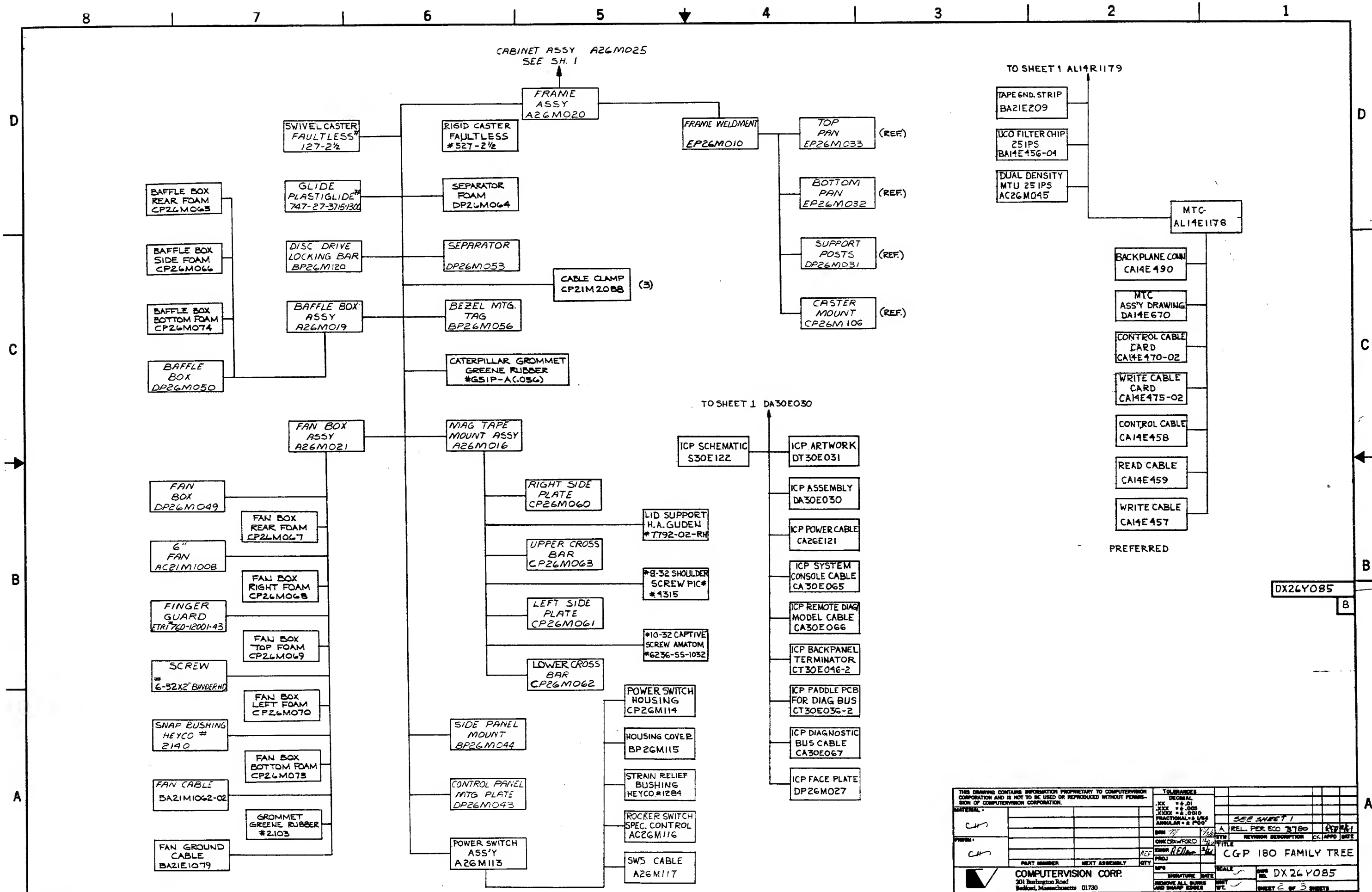


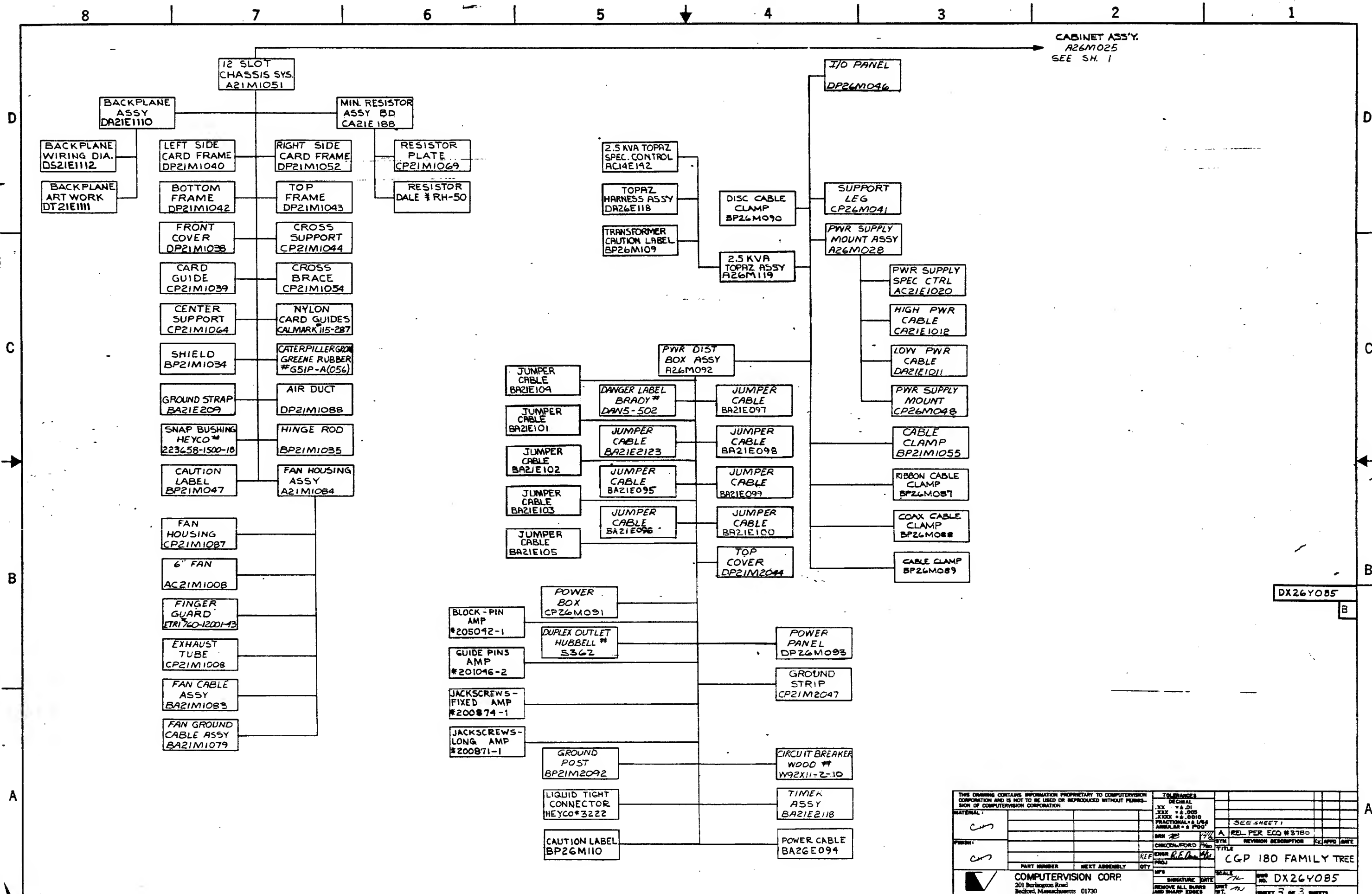
DX21Y1019

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MATERIAL				CHK	DATE	SEE SHEET 1	
FINISH				CHK	DATE	TITLE CGP-1000 FAMILY TREE	
PART NUMBER	SEE SHEET 1	NEXT ASSEMBLY	QTY	PROJ		SCALE	OWN NO. DX21Y1019
COMPUTERVISION CORP. 201 Burlington Road Bedford, Massachusetts 01730				SIGNATURE	DATE	SCALE	OWN NO. DX21Y1019
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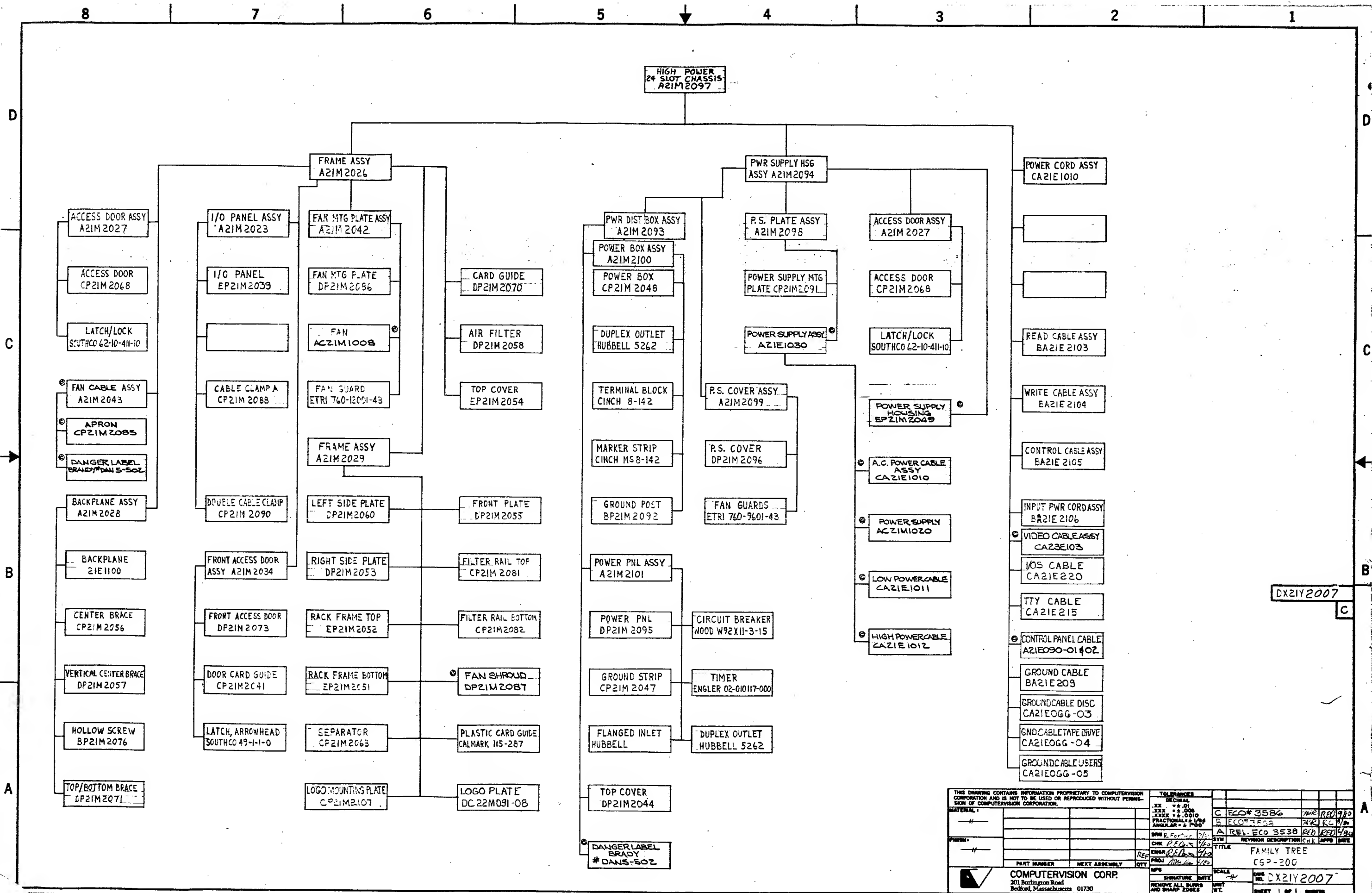


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CUT		CUT		A REC PER ECO 3180	
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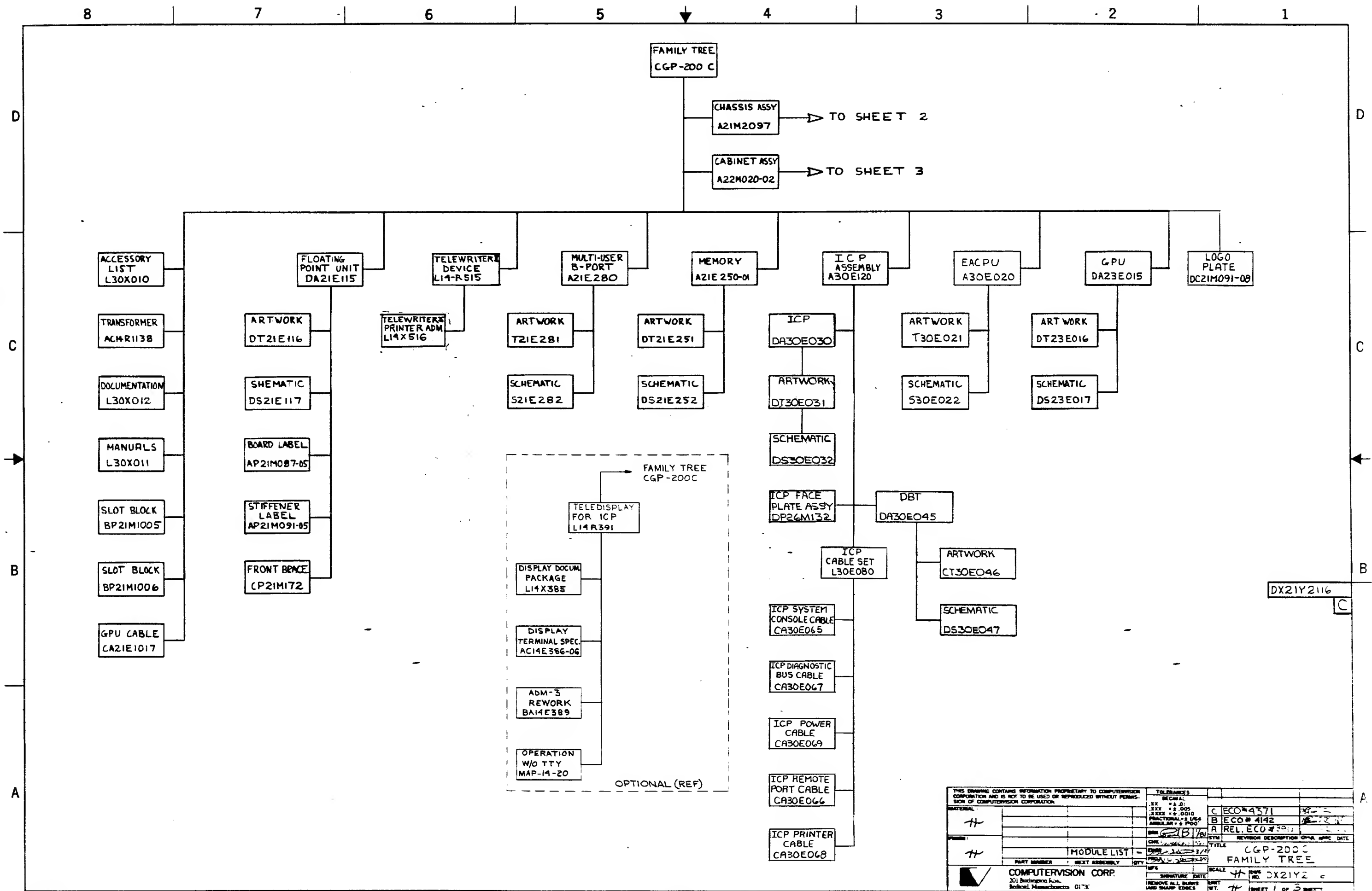


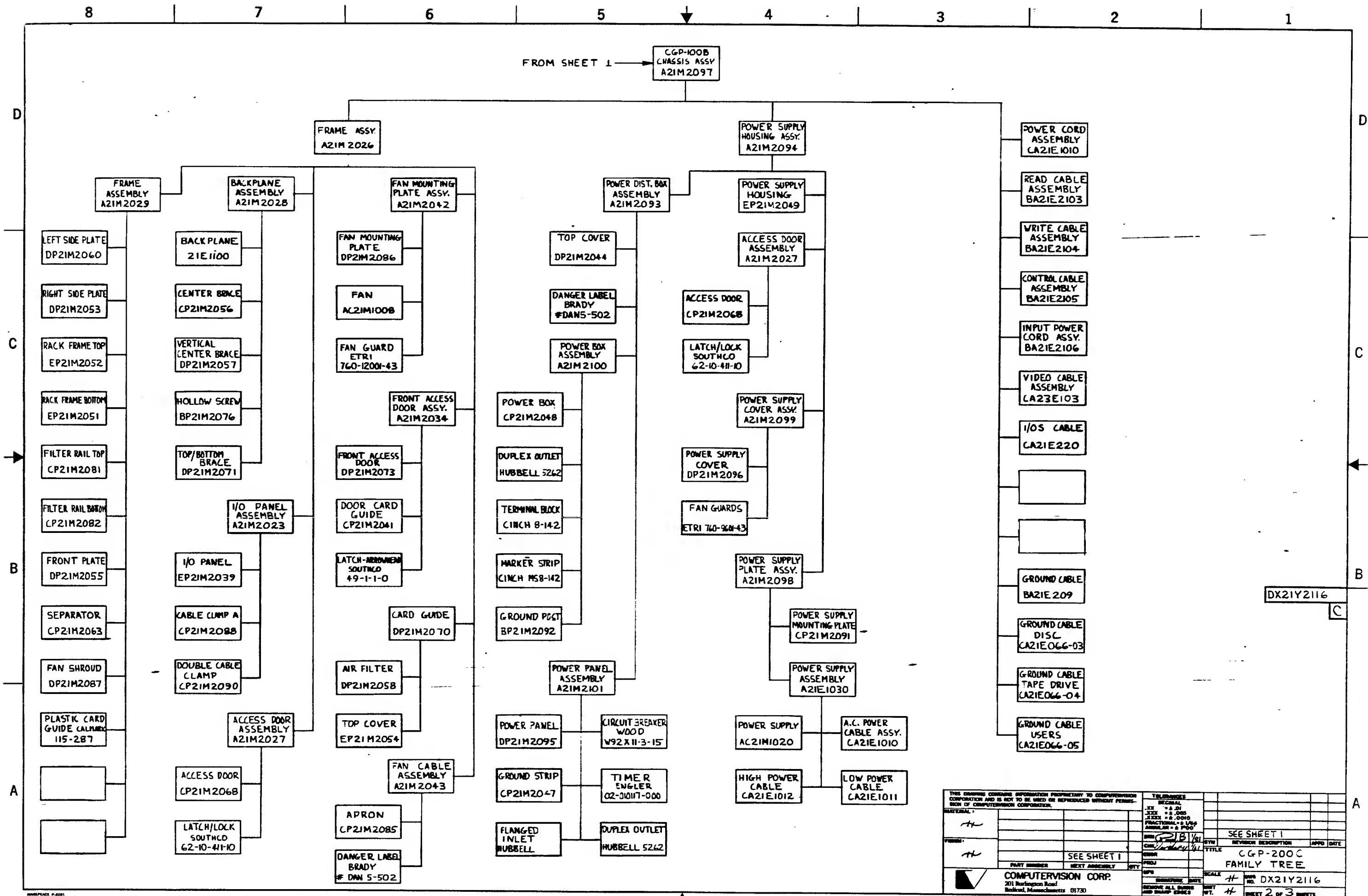


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SEE SHEET 1		A REL PER ECO #3780		TITLE	
CGP 180 FAMILY TREE		DX26Y085		SHEET 3 OF 3 SHEETS	



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MATERIAL	FINISH	REF	PROJ	DATE	BY
PART NUMBER	NEXT ASSEMBLY	QTY	SCALE	SHEET	OF 1
COMPUTERVISION CORP. 201 Burlington Road Bedford, Massachusetts 01730			DX21Y2007		





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COMPUTERVISION CORP.				201 Burlington Road		Bedford, Massachusetts 01730		SHEET 2 OF 3 SHEETS	

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1

FROM SHEET 1

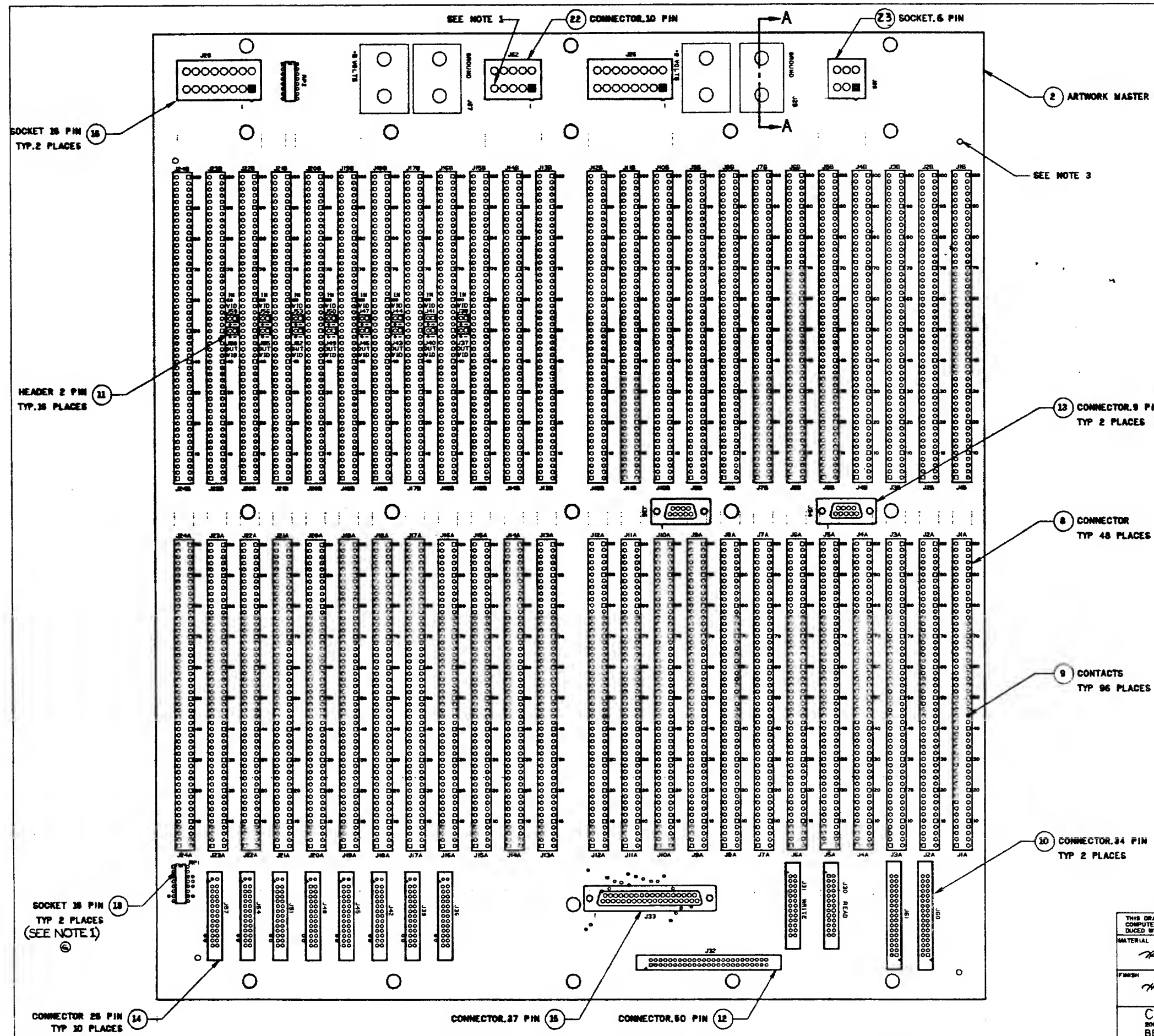
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ASSEMBLY
A22M020-02LEG BRACE
BP22M071
6 REQDOOR SUPPORT
BP22M076
2 REQDOOR LATCH
BRACKET
BP22M101TRIM STRIP
CP22M051-02
11 REQSTANDARD LEG
CP22M052
3 REQTRIM STRIP
(MAG TAPE)
CP22M102
2 REQTOP/BOTTOM
PANEL
DP22M056CAP TRIM
DP22M075MAG TAPE
SIDE
DP22M075MAG TAPE
BASE
DP22M079DESIGNER TOP
DP22M089MAG TAPE
SIDE
DP22M078-02LATCH-
KEEPER
BP22M122TOP HINGE
CP22M119BOTTOM HINGE
CP22M112LOGO PLATE
DC22M091-02TOP PANEL
EP22M098CABLE TROUGH
CP22M110TIE PLATE
EP22M074DUAL SIDE
PANEL
EP22M068CENTER PANEL
EP22M060STANDARD
SIDE PANEL
EP22M059
3 REQ.MAG TAPE
NUT PLATE
BP22M067
2 REQBASE SCREEN
"A"
CP22M156NUT BAR
CP22M184TRIM STRIP
CP22M051-01RIGHT SUPPORT
CP21M2045LEFT SUPPORT
CP21M2046MOUNTING RAIL
CP21M2084
2 REQPOWER
DIST BOX
A21M2093POWER SUPPLY
HOUSING
EP21M2049POWER SUPPLY
MOUNTING PLATE
CP21M2091FRONT PANEL
DP22M058DOOR
ASSEMBLY
DA22M108DOOR
DP22M081HINGE PLATE
BP22M111
2 REQHANDLE
BP22M116DOOR COVER
DP22M129FRONT DOOR
ASSEMBLY
DA22M256FRONT DOOR
DP22M255CONTROL
PANEL BEZEL
CP22M094SPACER
BP22M181

DX21Y2116

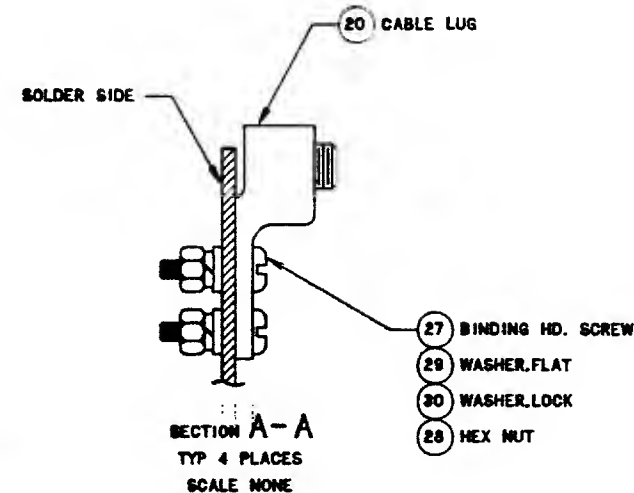
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FROM				FOR			
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COMPUTERVISION CORP. 201 Burlington Road Bedford, Massachusetts 01730				SCALE		SHEET 3 OF 3 SHEETS	
				REMOVE ALL DIMS AND SHARP EDGES		SHEET 3 OF 3 SHEETS	

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12 Slot Configuration (Rev.A) CP21M054	2-8
12 Slot Backplane Assembly (Rev.B) DA21E1110	2-9
12 Slot Backplane Schematic (Rev.A) DS21E1112	2-10



NOTES:
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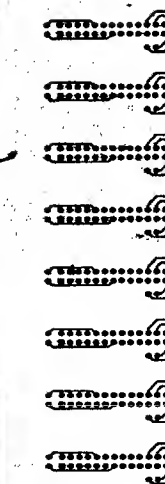
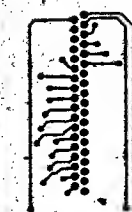
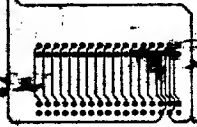
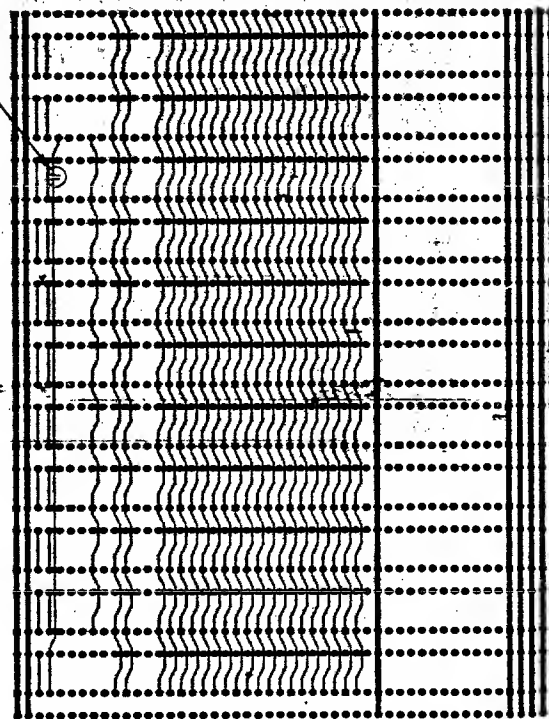
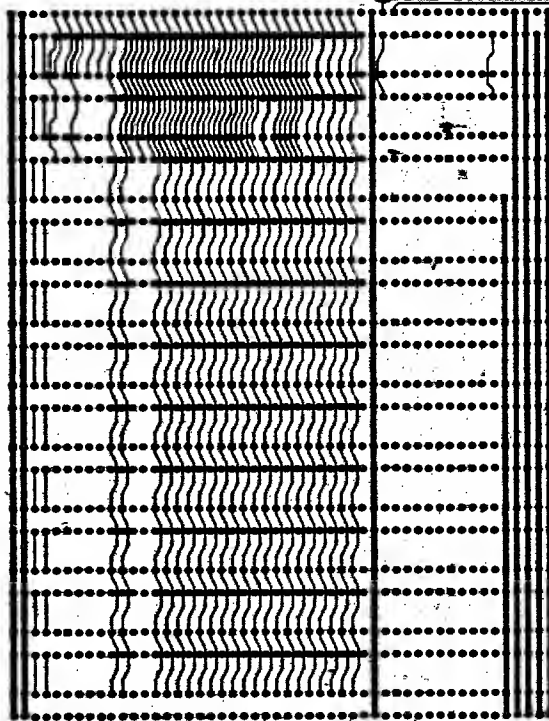
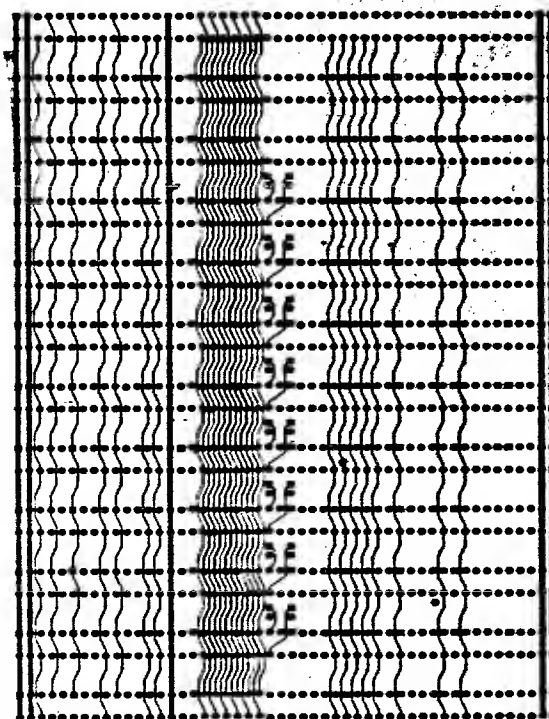
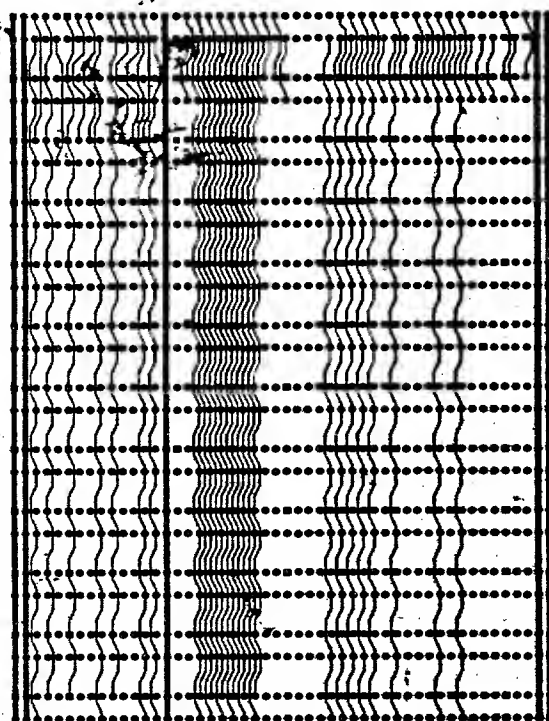


CUTS FOR A1/B ARTWORK
 ① J1A15-92

DA2IE1100
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SIGNATURE		DATE		UNIT		SHT 1 OF 2 SHTS	
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COMPUTERVISION CORP.
 200 BURLINGTON ROAD, ROUTE 62
 BEDFORD, MASS. 01730



DT2E1101-C
TOP SIDE
POSITIVE 10-20-60
SHEET 2 OF 10
LAYER

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DA21E1100

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COMPUTERVISION CORP 201 BURLINGTON RD BEDFORD, MASS 01730				SCALE: 1/2" = 1" SHEET 2 OF 2 SHEETS	

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//				CHK BY R. COLE 9-12		TITLE 24S SCHEMATIC	
		0A2IE1100		ENGR TIDD 9-12		CGP100/200 BACKPLA	
				PROJ. E. A. B. 9-12			
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COMPUTERVISION CORP.				MFG			
201 BURLINGTON ROAD ROUTE 62				SIGNATURE DATE			
BEDFORD, MASS. 01730				REMOVE ALL DIMS AND SHARP EDGES		UNIT: // SHT 1 OF 4 SHTS	

2-5

VULTEX CONNECTOR

J43						J44					
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AB	ROTARY	MURDER	2	15	MURDER	MURDER	2	15	MURDER	MURDER	AB
AB	ROTARY	MURDER	3	16	MURDER	MURDER	3	16	MURDER	MURDER	AB
AB	ROTARY	MURDER	4	17	MURDER	MURDER	4	17	MURDER	MURDER	AB
AB	ROTARY	MURDER	5	18	MURDER	MURDER	5	18	MURDER	MURDER	AB
AB	ROTARY	MURDER	6	19	MURDER	MURDER	6	19	MURDER	MURDER	AB
AB	ROTARY	MURDER	7	20	MURDER	MURDER	7	20	MURDER	MURDER	AB
AB	ROTARY	MURDER	8	21	MURDER	MURDER	8	21	MURDER	MURDER	AB
AB	ROTARY	MURDER	9	22	MURDER	MURDER	9	22	MURDER	MURDER	AB
AB	ROTARY	MURDER	10	23	MURDER	MURDER	10	23	MURDER	MURDER	AB
AB	ROTARY	MURDER	11	24	MURDER	MURDER	11	24	MURDER	MURDER	AB
AB	ROTARY	MURDER	12	25	MURDER	MURDER	12	25	MURDER	MURDER	AB
AB	ROTARY	MURDER	13	26	MURDER	MURDER	13	26	MURDER	MURDER	AB
J43						J44					
PM	SIGNAL	VS SIGNAL	1	2	VS SIGNAL	VS SIGNAL	PM	PM	VS SIGNAL	VS SIGNAL	BLK 1B
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VULTEX CONNECTOR

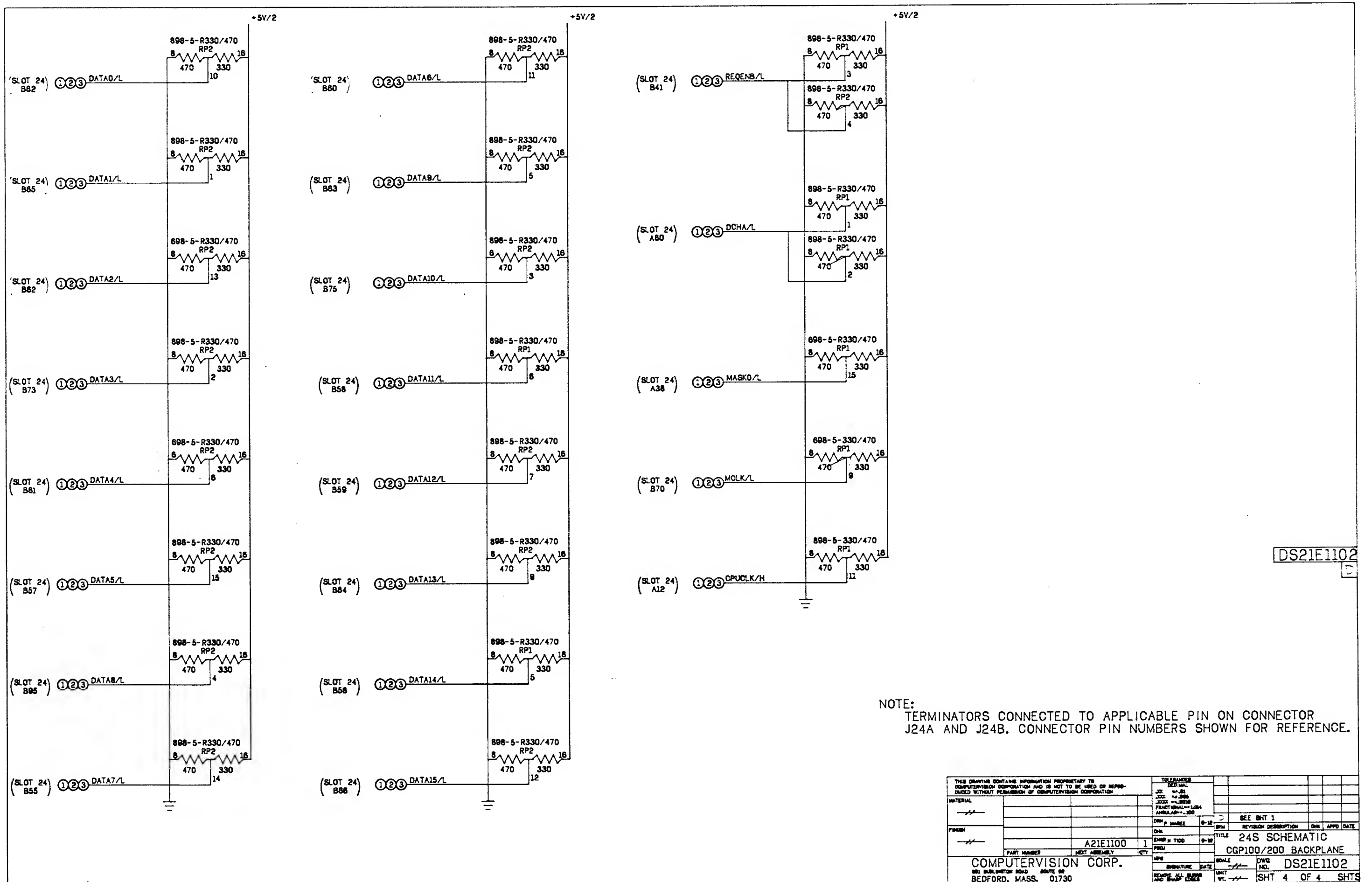
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AB	ROTARY	MURDER	2	15	MURDER	MURDER	2	15	MURDER	MURDER	AB
AB	ROTARY	MURDER	3	16	MURDER	MURDER	3	16	MURDER	MURDER	AB
AB	ROTARY	MURDER	4	17	MURDER	MURDER	4	17	MURDER	MURDER	AB
AB	ROTARY	MURDER	5	18	MURDER	MURDER	5	18	MURDER	MURDER	AB
AB	ROTARY	MURDER	6	19	MURDER	MURDER	6	19	MURDER	MURDER	AB
AB	ROTARY	MURDER	7	20	MURDER	MURDER	7	20	MURDER	MURDER	AB
AB	ROTARY	MURDER	8	21	MURDER	MURDER	8	21	MURDER	MURDER	AB
AB	ROTARY	MURDER	9	22	MURDER	MURDER	9	22	MURDER	MURDER	AB
AB	ROTARY	MURDER	10	23	MURDER	MURDER	10	23	MURDER	MURDER	AB
AB	ROTARY	MURDER	11	24	MURDER	MURDER	11	24	MURDER	MURDER	AB
AB	ROTARY	MURDER	12	25	MURDER	MURDER	12	25	MURDER	MURDER	AB
AB	ROTARY	MURDER	13	26	MURDER	MURDER	13	26	MURDER	MURDER	AB
J43						J44					
PM	SIGNAL	VS SIGNAL	1	2	VS SIGNAL	VS SIGNAL	PM	PM	VS SIGNAL	VS SIGNAL	BLK 2B
1	ROTARY	NO					1	ROTARY	NO		1
2	ROTARY	NO					2	ROTARY	NO		2

VULTEX CONNECTOR

J43						J44					
BLK 2A	VS SIGNAL	VS SIGNAL	PM	PM	VS SIGNAL	VS SIGNAL	PM	PM	VS SIGNAL	VS SIGNAL	BLK 2B
AB	ROTARY	MURDER	1	14	MURDER	MURDER	1	14	MURDER	MURDER	AB
AB	ROTARY	MURDER	2	15	MURDER	MURDER	2	15	MURDER	MURDER	AB
AB	ROTARY	MURDER	3	16	MURDER	MURDER	3	16	MURDER	MURDER	AB
AB	ROTARY	MURDER	4	17	MURDER	MURDER	4	17	MURDER	MURDER	AB
AB	ROTARY	MURDER	5	18	MURDER	MURDER	5	18	MURDER	MURDER	AB
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AB	ROTARY	MURDER	11	24	MURDER	MURDER	11	24	MURDER	MURDER	AB
AB	ROTARY	MURDER	12	25	MURDER	MURDER	12	25	MURDER	MURDER	AB
AB	ROTARY	MURDER	13	26	MURDER	MURDER	13	26	MURDER	MURDER	AB
J43						J44					
PM	SIGNAL	VS SIGNAL	1	2	VS SIGNAL	VS SIGNAL	PM	PM	VS SIGNAL	VS SIGNAL	BLK 2B
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DS21E1102

2-6



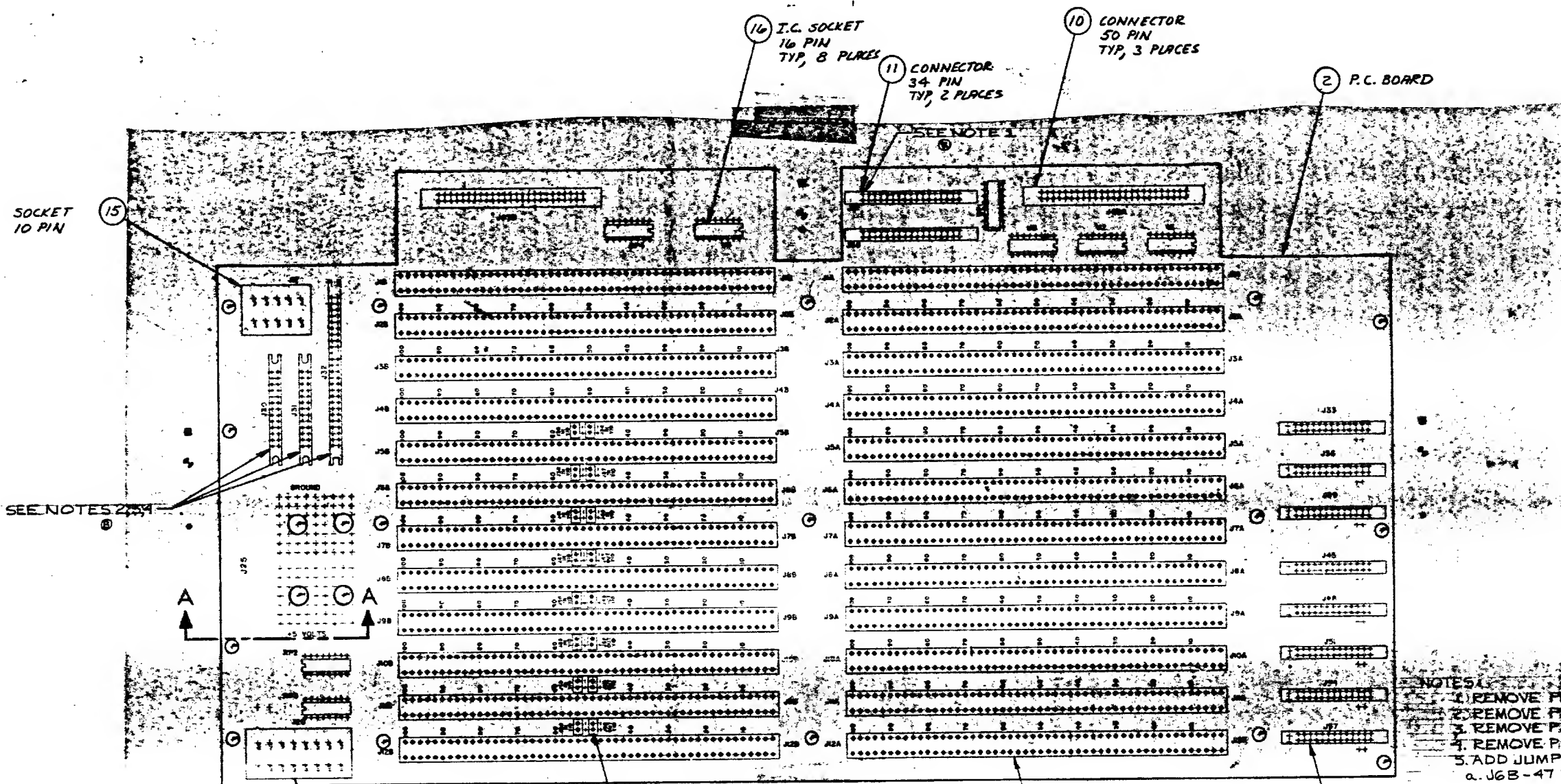
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	REV.												
	DEVICE CODE												
<p>CAUTION: 1. TO AVOID SERIOUS DAMAGE TO THE ELECTRONICS, REMOVE POWER BEFORE REMOVING ANY PC CARDS. 2. TO INSURE AN OPTIMUM COOLING ENVIRONMENT IN THIS EQUIPMENT, USE COMPUTERVISION STANDARD SLOT BLOCKS. (CV P/N SP2H006 SINGLE OR CV P/N SP2H005 DOUBLE) WHENEVER A SYSTEM HAS 2 OR MORE OPEN PCB SLOTS BETWEEN ADJACENT BOARDS FOR EXAMPLE</p> <p>* OPTIONAL SLOTS IN CGP-80</p> <p>CGP-80: PCB PCB PCB PCB PCB PCB PCB SLOT OPTION SINGLE SLOT BLOCK PCB PCB</p> <p>SLOT: 1 2 3 4 5 6 7 8 9 10 11 12</p> <p>CGP-180: PCB PCB PCB PCB PCB PCB PCB SLOT OPTION PCB PCB PCB PCB PCB PCB</p> <p>SLOT: 1 2 3 4 5 6 7 8 9 10 11 12</p> <p>SYSTEM S.N. _____</p> <p>CGP-80 12 SLOT CONFIGURATION</p> <p>CGP-180</p> <p>P/N CP21M054 REV A S/N 993-02090 MADE IN USA</p>													
8.45													

CP21M054
A

NOTES:

- VENDOR: TECHPRINT INC.
15 SIXTH ROAD
WOBURN, MA. 01801
- COLOR: BLACK LETTERS ON WHITE BACKGROUND
- ARTWORK MASTER WILL BE SUPPLIED TO VENDOR BY DRAFTING DEPT.
- MATERIAL: .004 THICK FLEXIBLE VINYL ADHESIVE BACK.

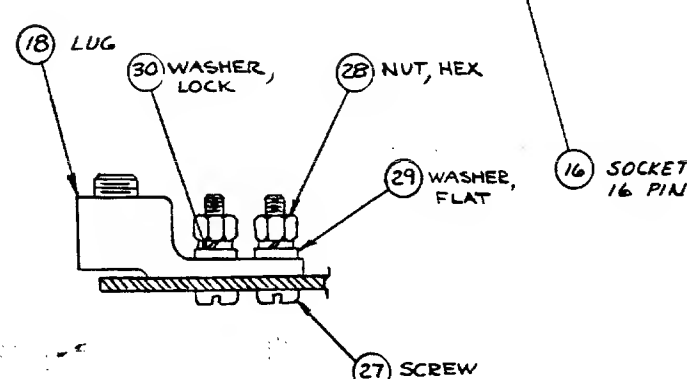
THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.				TOLERANCE DECIMAL INCH .0005" FRACTIONAL .0005" ANGULAR .5°							
SEE NOTE 4											
SEE NOTE 2											
PART NUMBER				NEXT ASSEMBLY				QTY			
MODULE LIST				1				PROJ. NAME			
COMPUTERVISION CORP.				201 BURLINGTON RD. ROUTE 62				BEDFORD, MASS 01730			
SCALE				1:1				SHEET 1 OF 1 SHEET			
TITLE				CGP				12 SLOT CONFIGURATION			
REV. ECO # 3935				A				REL			



SEE NOTES 2, 3, 4

SEE NOTE 1

- NOTES:
1. REMOVE PIN 18 ON J61
 2. REMOVE PIN 14 ON J30
 3. REMOVE PIN 14 ON J31
 4. REMOVE PIN 2 ON J32
 5. ADD JUMPER FOR REVA ARTWORK
a. J6B-47 TO J5B-47

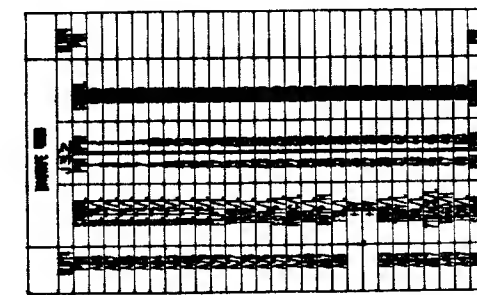
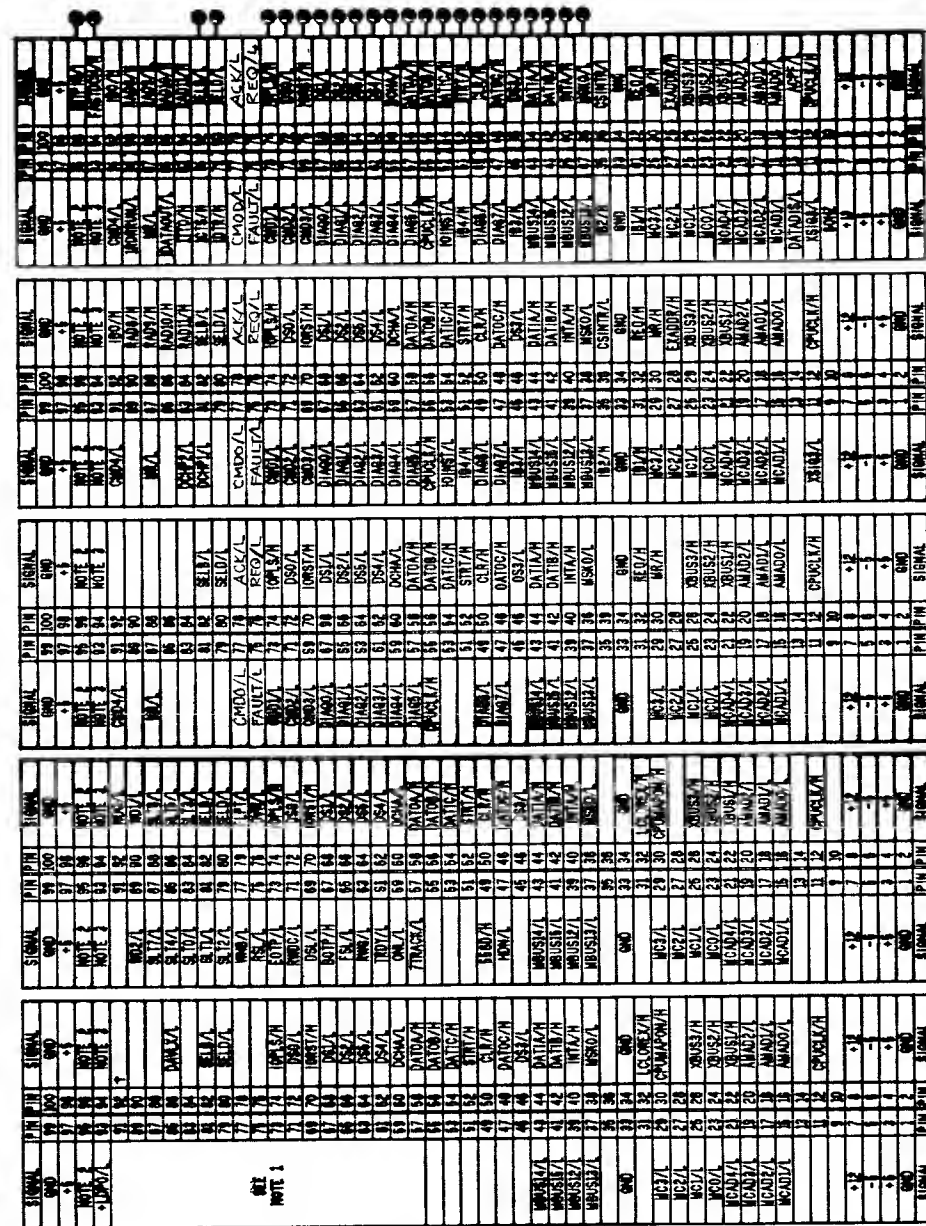
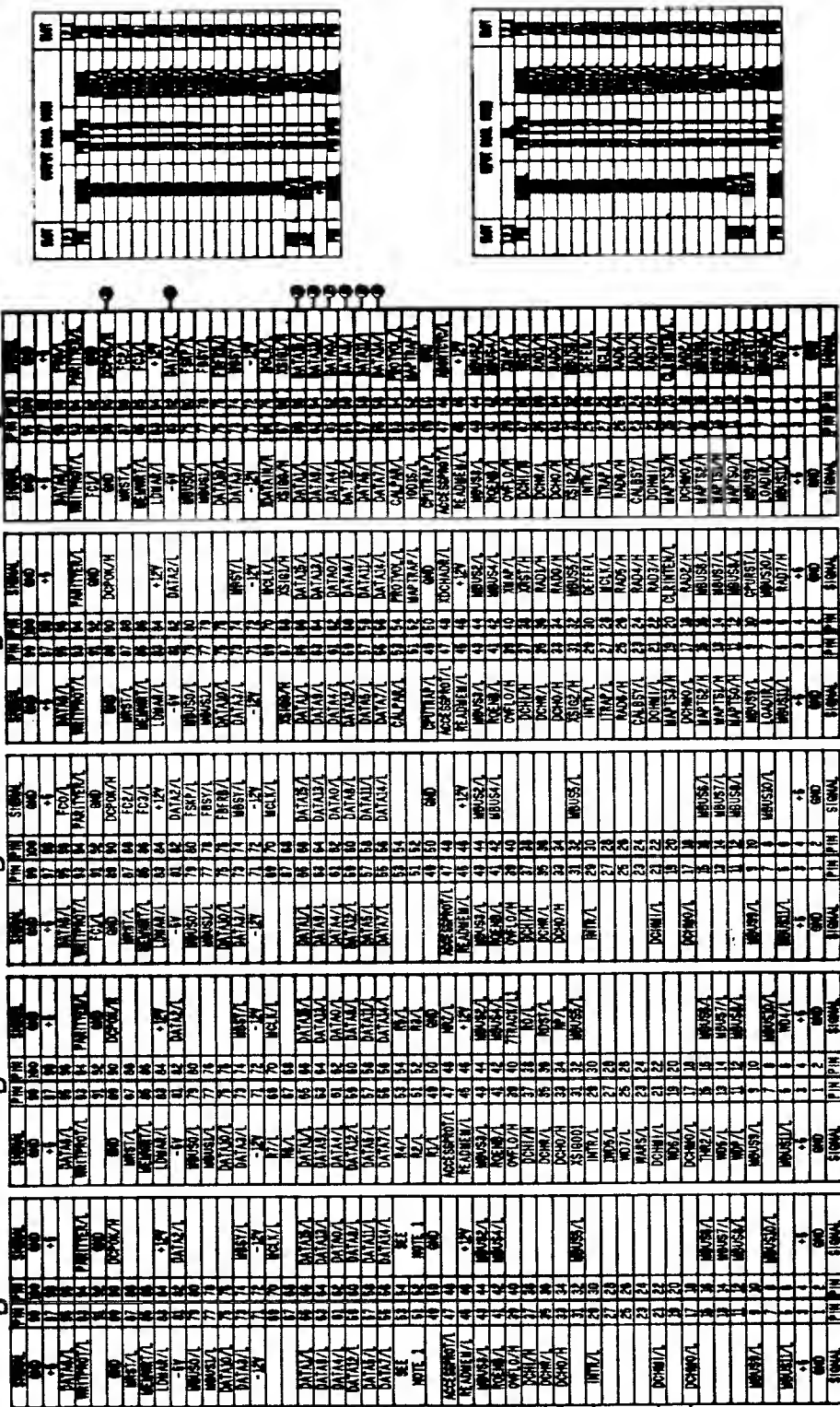


SECTION A-A
TYP, 2 PLACES
SCALE: NONE

DA21E1110

B

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.		TOLERANCES DECIMALS XX ± .05 XXX ± .005 FRACTIONAL ± 1/64 ANGULAR ± .1°		BTECO # 4369 28/1/86 A REL ECO 4129 28/1/86 1 ISSUED JL	
MATERIAL	SEE B/M	FINISH	—	DATE	2/1/86
PART NUMBER	AZIM1051	QTY	1	ENGR	R. G. P. 6-8
COMPUTERVISION CORP 201 BURLINGTON RD BEDFORD, MASS 01730		SCALE	1:1	REV	DA21E1110
REMOVE ALL DIMS AND SHARP EDGES		DATE	2/1/86	SHEET 1 OF 1 SHEETS	



	2	1	(+5V OUT) SEN	+5V
	4	3	(+5V RET) SEN	GND
	6	5	(+12V OUT) SEN	+12V
	8	7	(+12V RET) SEN	GND
	10	9	(-12V RET) SEN	GND
	12	11	(-12V OUT) SEN	-12V
	14	13	GND	ACPPF/L
	16	15	(-5V OUT) SEN	DCPCK/H

ICP CONNECTOR			
+8V	2	1	+8V
GND	4	8	GND
+12V	6	5	+12V
GND	8	7	GND

DS21E1112

NOTE 1:

SLOTS 5,6,7,8,9,10,11 AND 12 HAVE PROVISIONS FOR EITHER VQU OR IDS INTERFACES. BOTH USE THE CORRESPONDING 26 PIN CONNECTORS J27,J30,J33,J36, AND J39. CONNECTORS J28, J29,J31,J32,J34,J35,J37,J38,J40, AND J41 ARE USED WITH VQU INTERFACES ONLY.

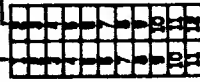
NOTE 2:

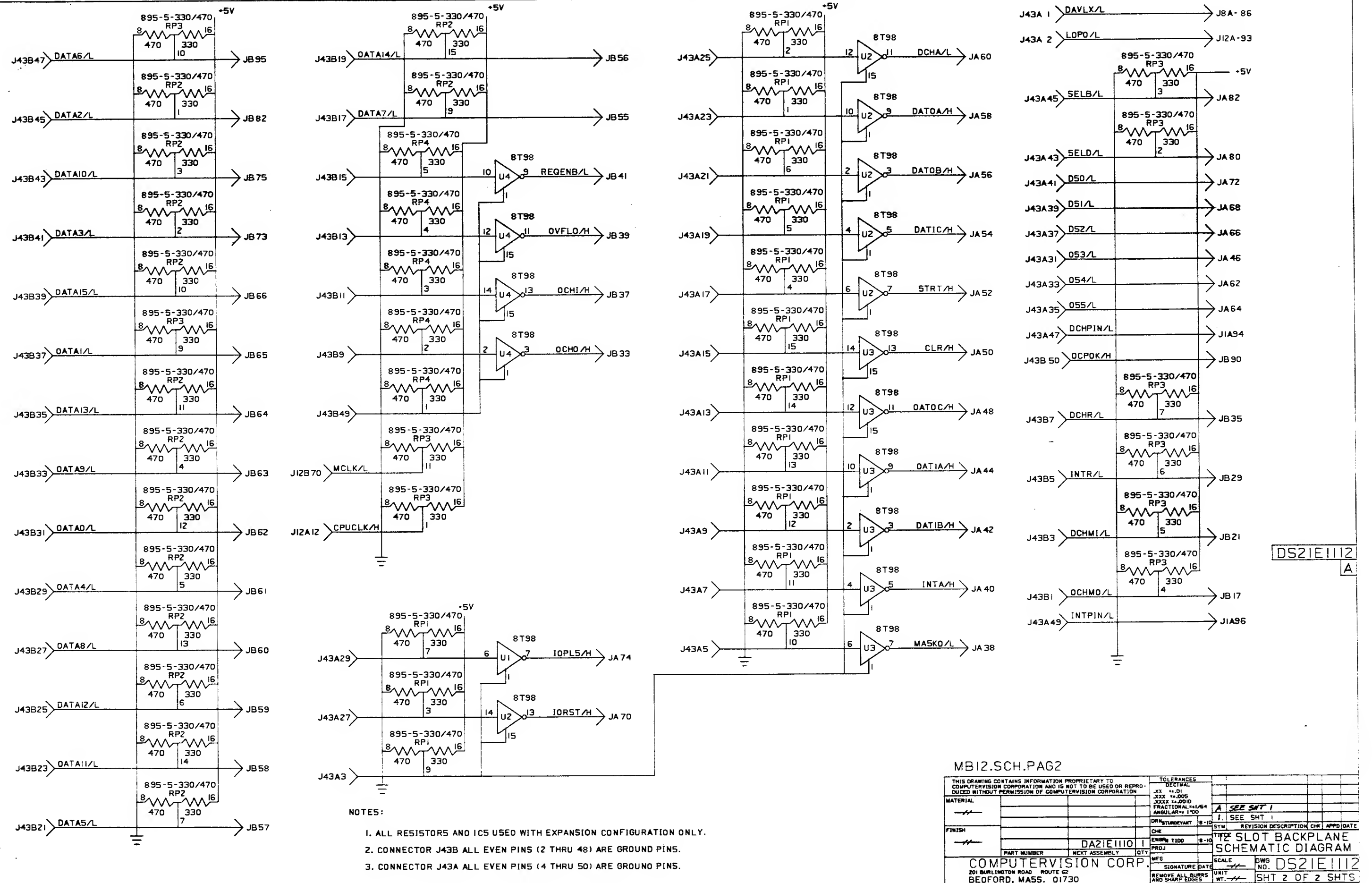
NOTE 2:
INTERRUPT PRIORITY PASSING
CONNECTIONS
FROM A98 TO A96
OF SLOT: — OF SLOT: —



NOTE 3:

NOTE 3:
DATA CHANNEL PRIORITY PASSING
CONNECTIONS
FROM A93 TO A94
OF SLOT: 7 OF SLOT: 7

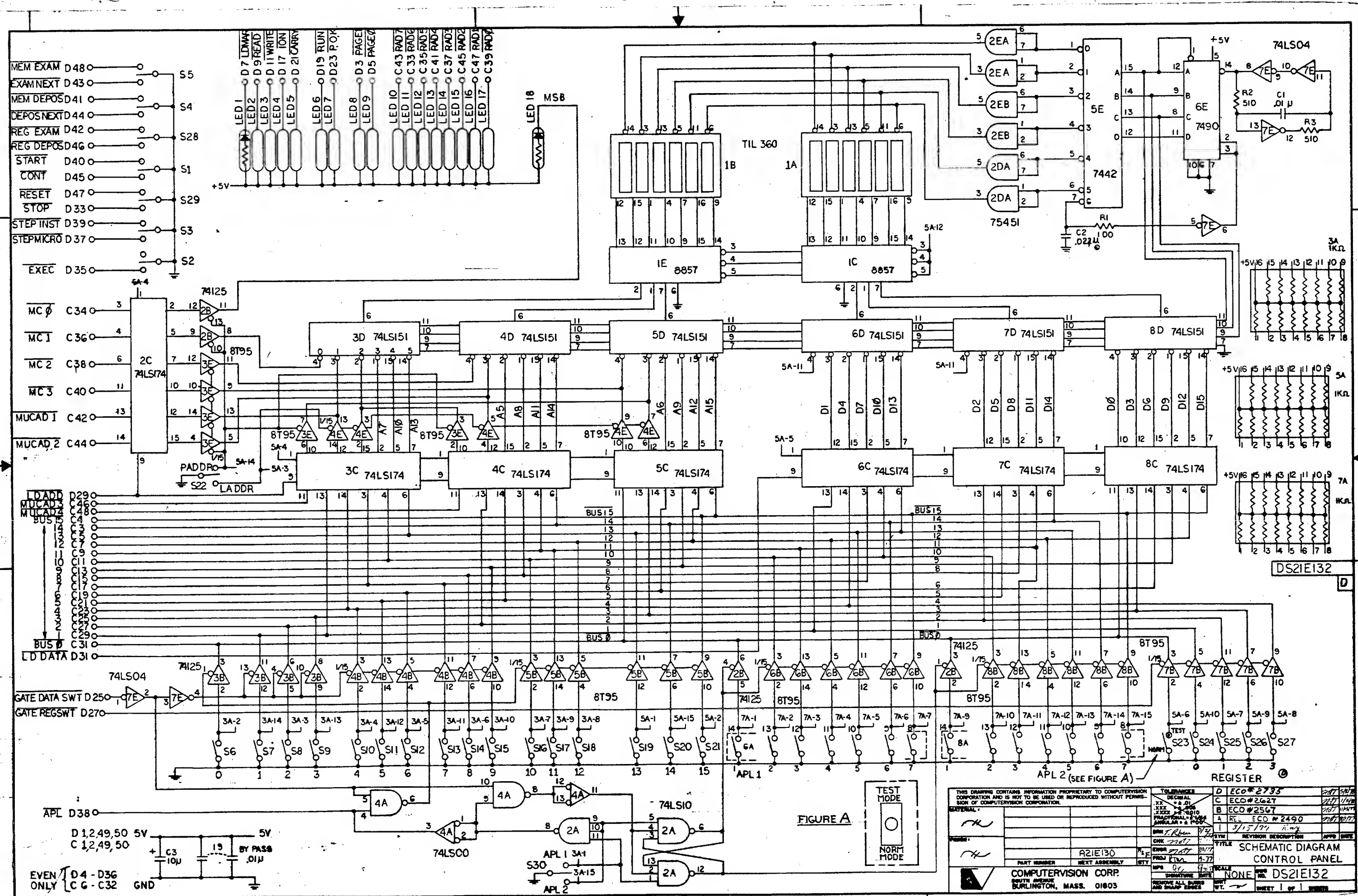
[illegible]



Section Three
Control Panel

Maintenance Control Panel (MCP)(Rev.D) DS21E132

3-1

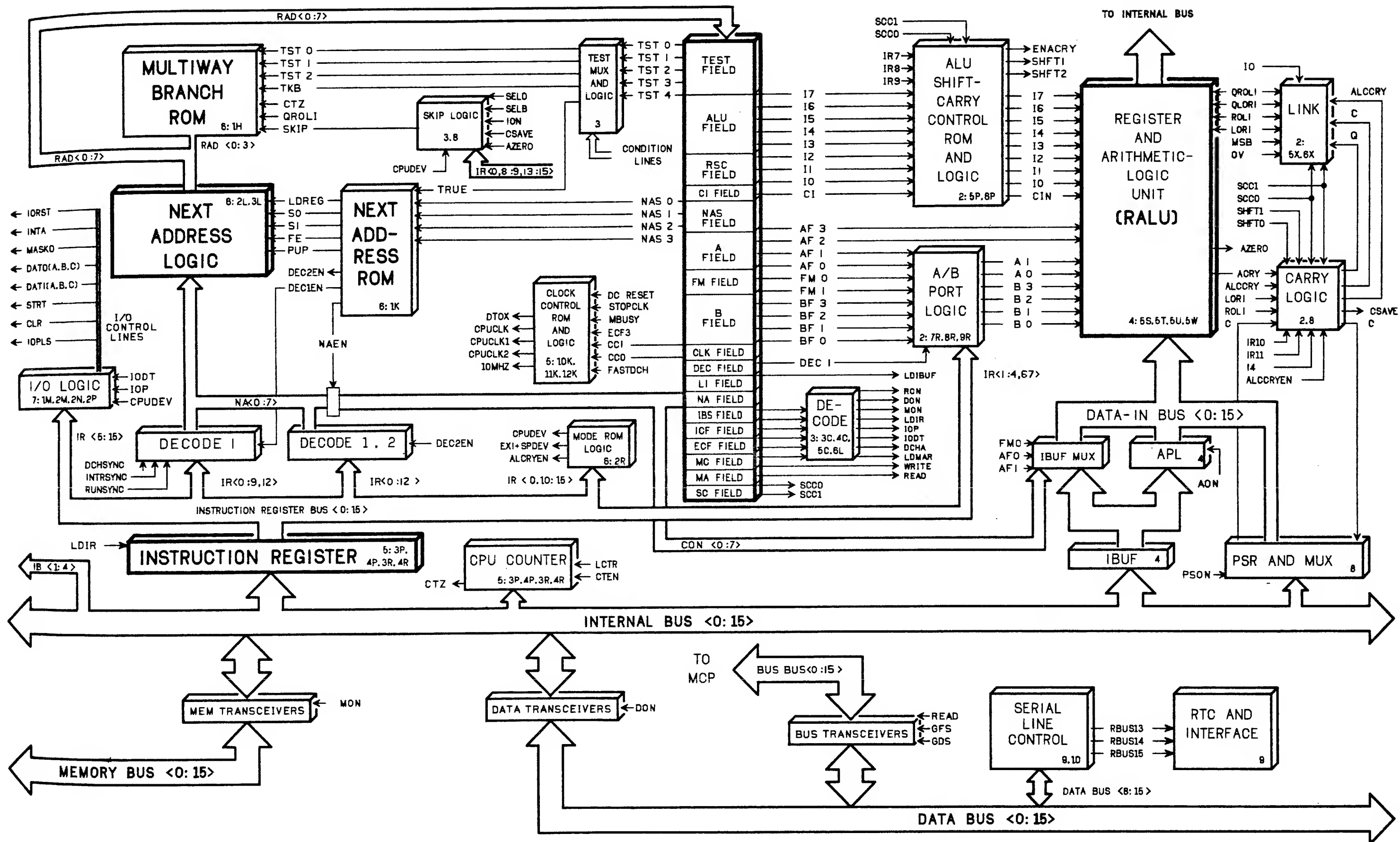


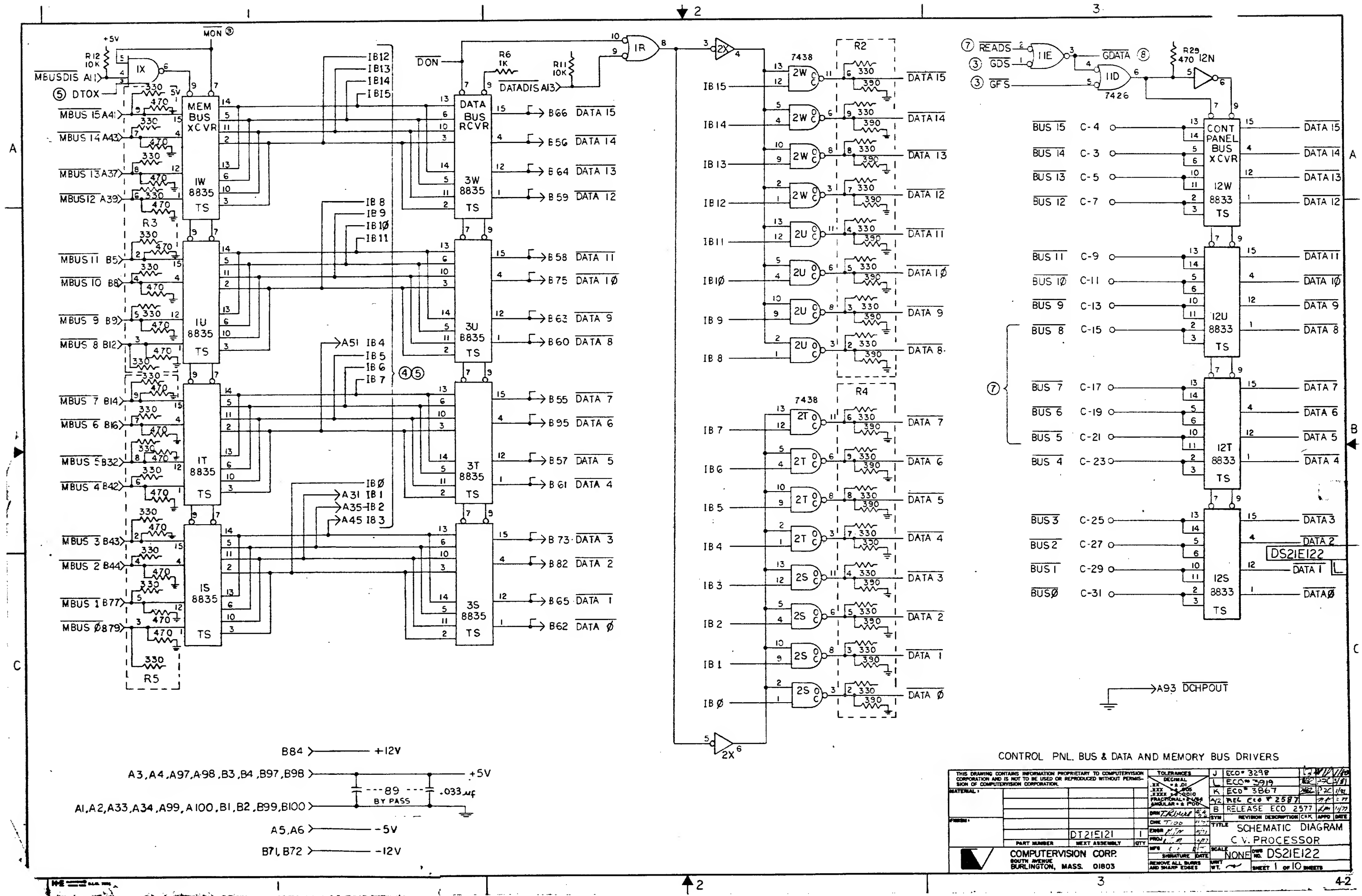
Section 4 Modules

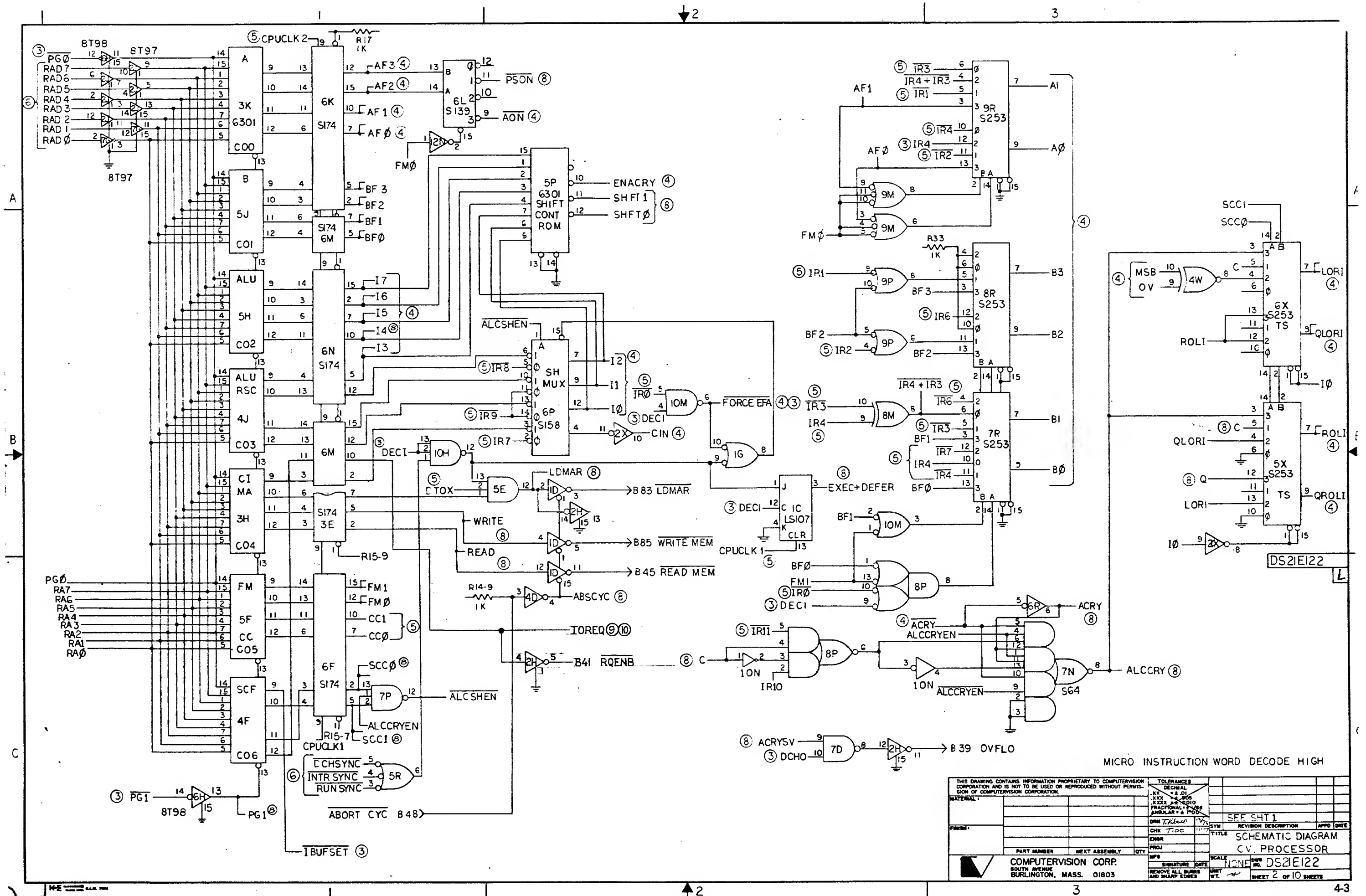
Block Diagram	4-1
Computervision Processor, Schematic Diagram (Rev.L) DS21E122	4-2
Microprogram Flow Chart (Rev.E) DS21E015	4-12
Memory Management and Protection Unit (Rev.K) DS21E107	4-40
B-Port Management and Protection Unit (Rev.F) DS21E282	4-45
Floating Point Unit (FPU) (Rev.C) DS21E117	4-50
128K/32K A/B-Port Memory Unit (Rev.G) DS21E252	4-57
Power Supply	4-73

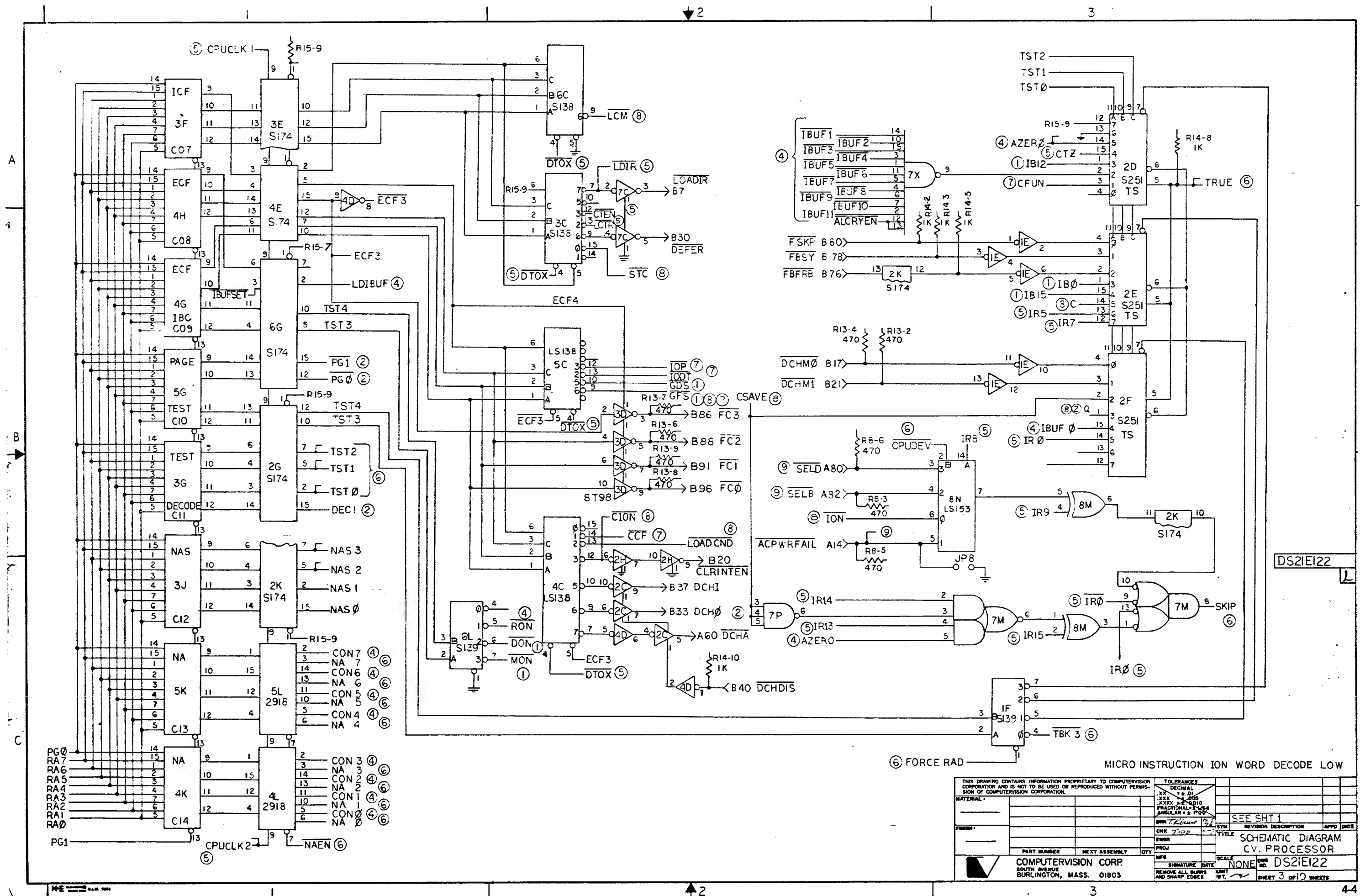
Computervision Processor, Schematic Diagram

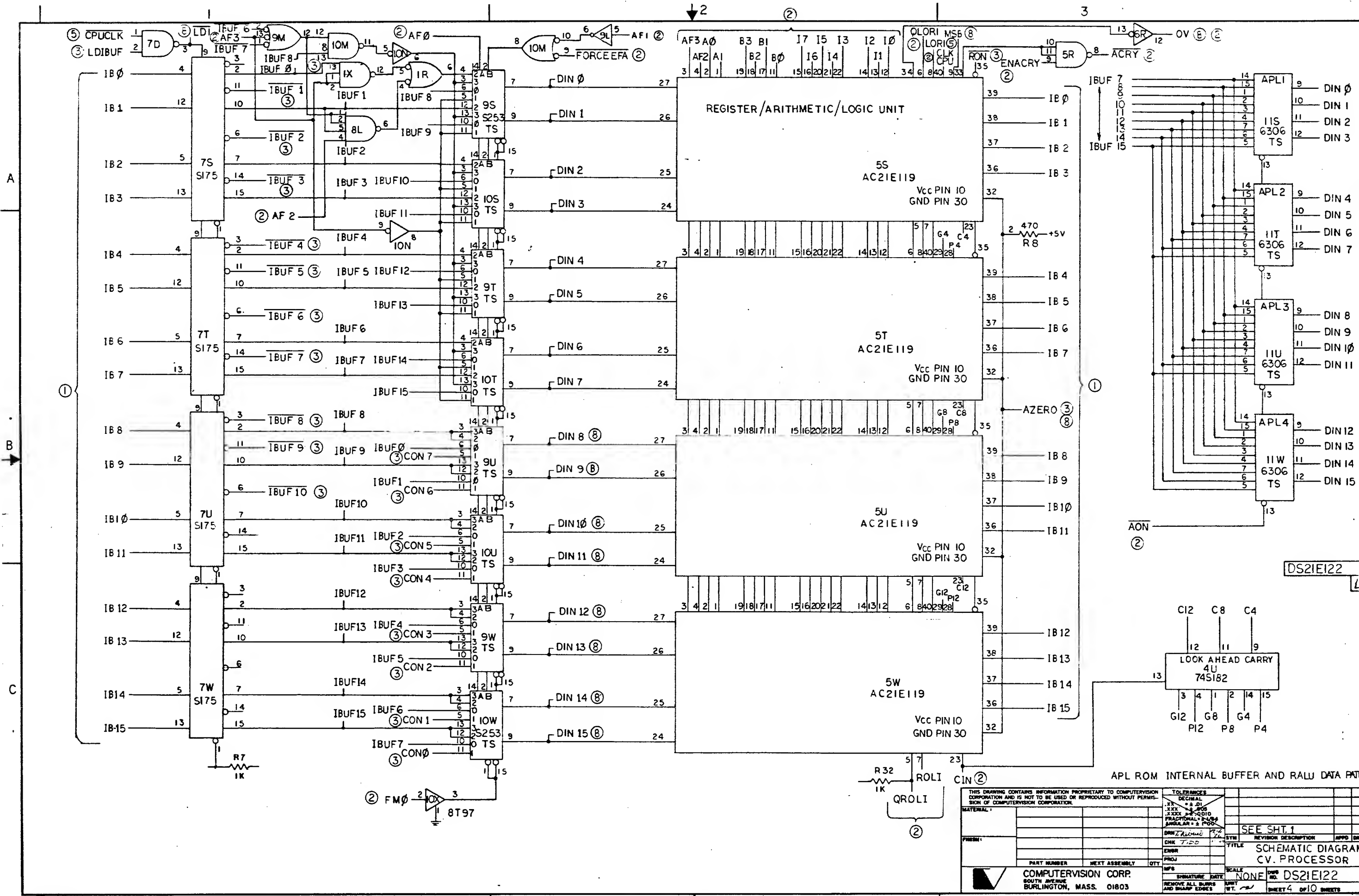
Block Diagram	4-1
Data Transceivers	4-2
Control Store	4-3/4-4
Microinstruction Decode	4-3/4-4
Test Multiplexer	4-4
RALU	4-5
APL ROMs	4-5
Instruction Register	4-6
CPU Clock	4-6
FPLAS	4-7
Next Address Logic	4-7
I/O Logic	4-8/4-10
Control Panel Encoding	4-8
Processor State Register	4-9
Control Panel Interface	4-9
Real Time Clock	4-10
Serial Line Control	4-11



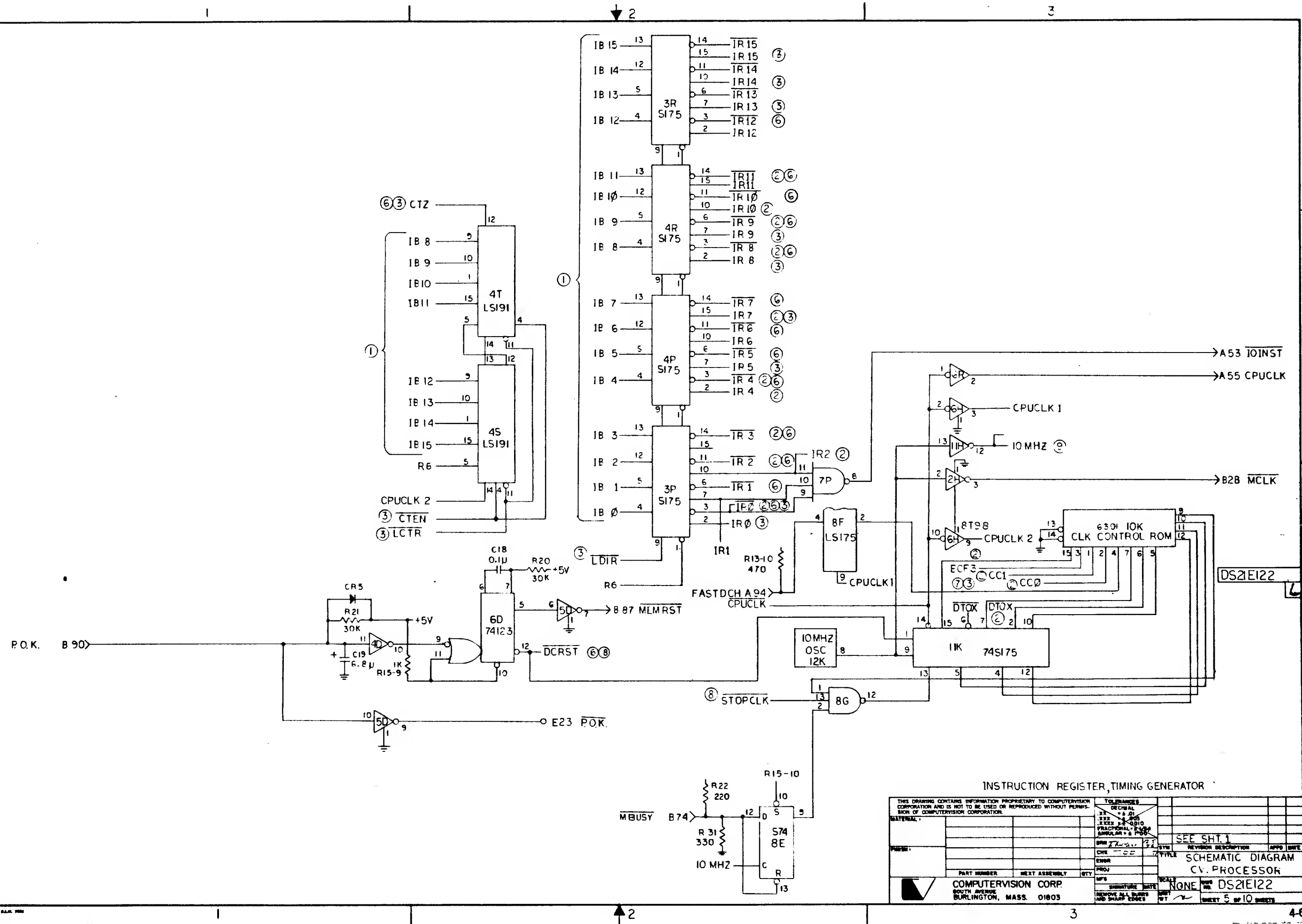




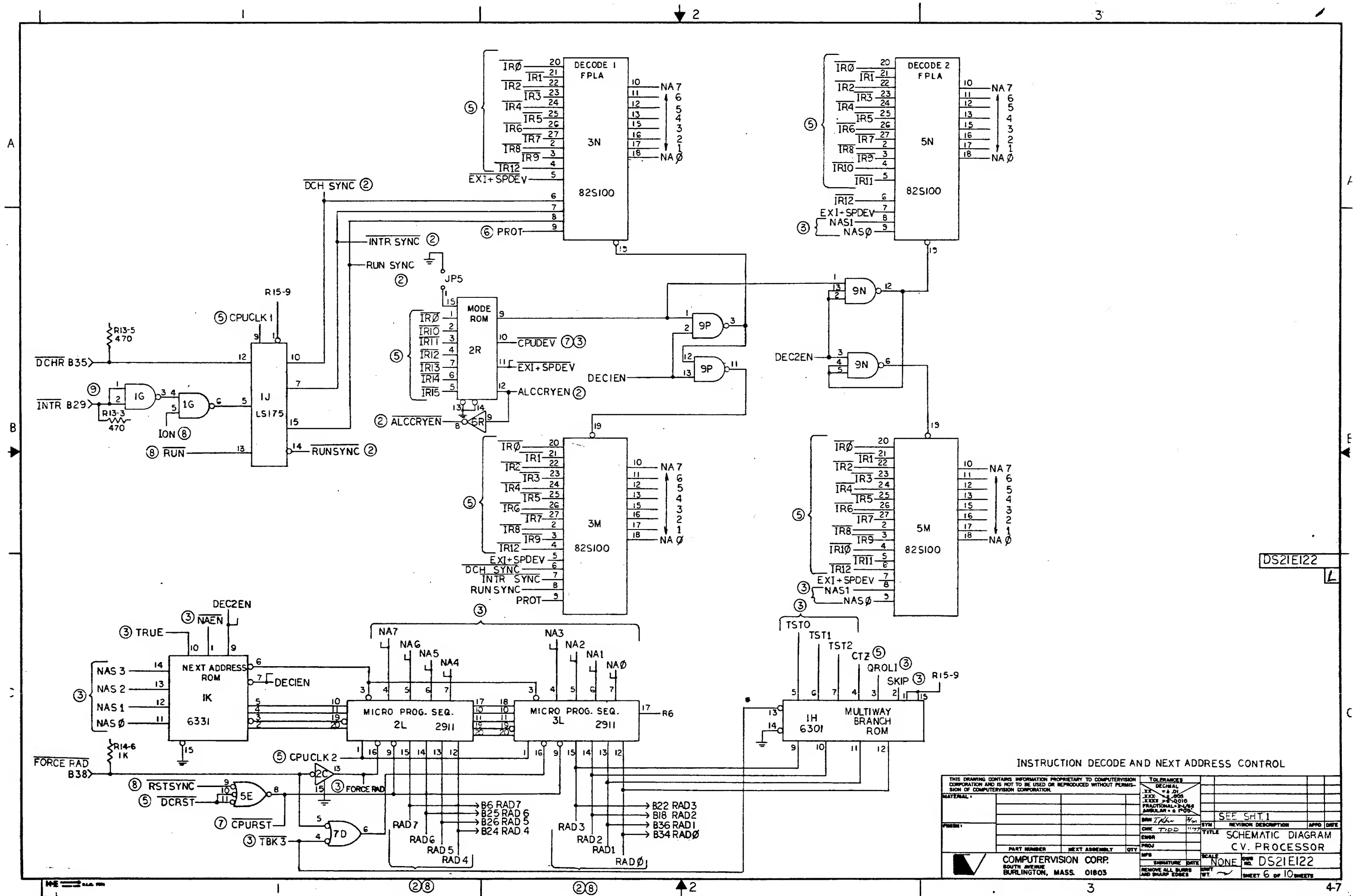




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MATERIAL		SEE SHT. 1	
FINISH		SYN REVISION DESCRIPTION APPD. DATE	
PART NUMBER		TITLE	
NEXT ASSEMBLY		QTY	
COMPUTERVISION CORP.		SCALE NONE	
BURLINGTON, MASS. 01803		DWG. NO. DS2IEI22	
REMOVE ALL BURRS AND SHARP EDGES		SHEET 4 OF 10 SHEETS	

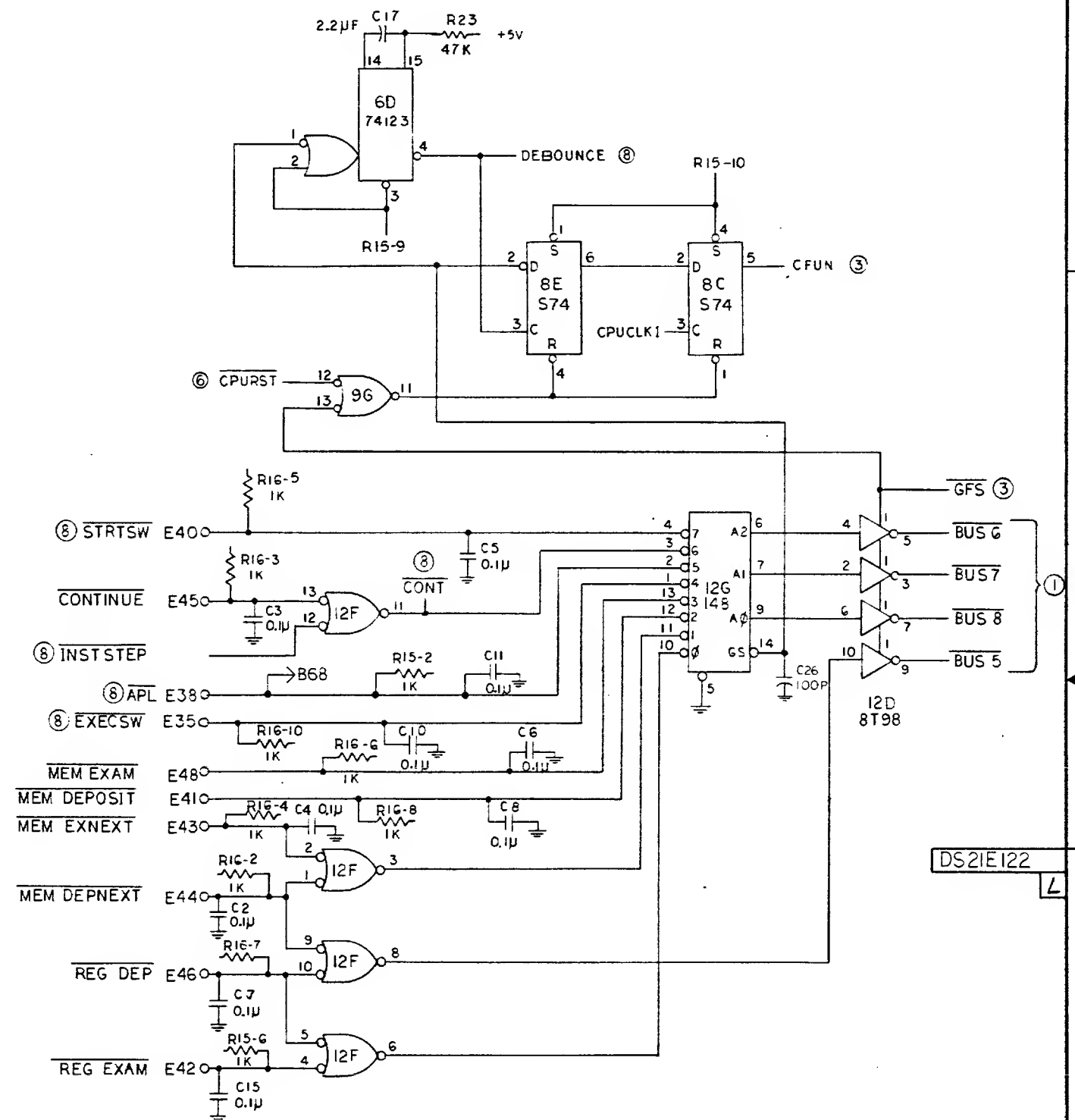
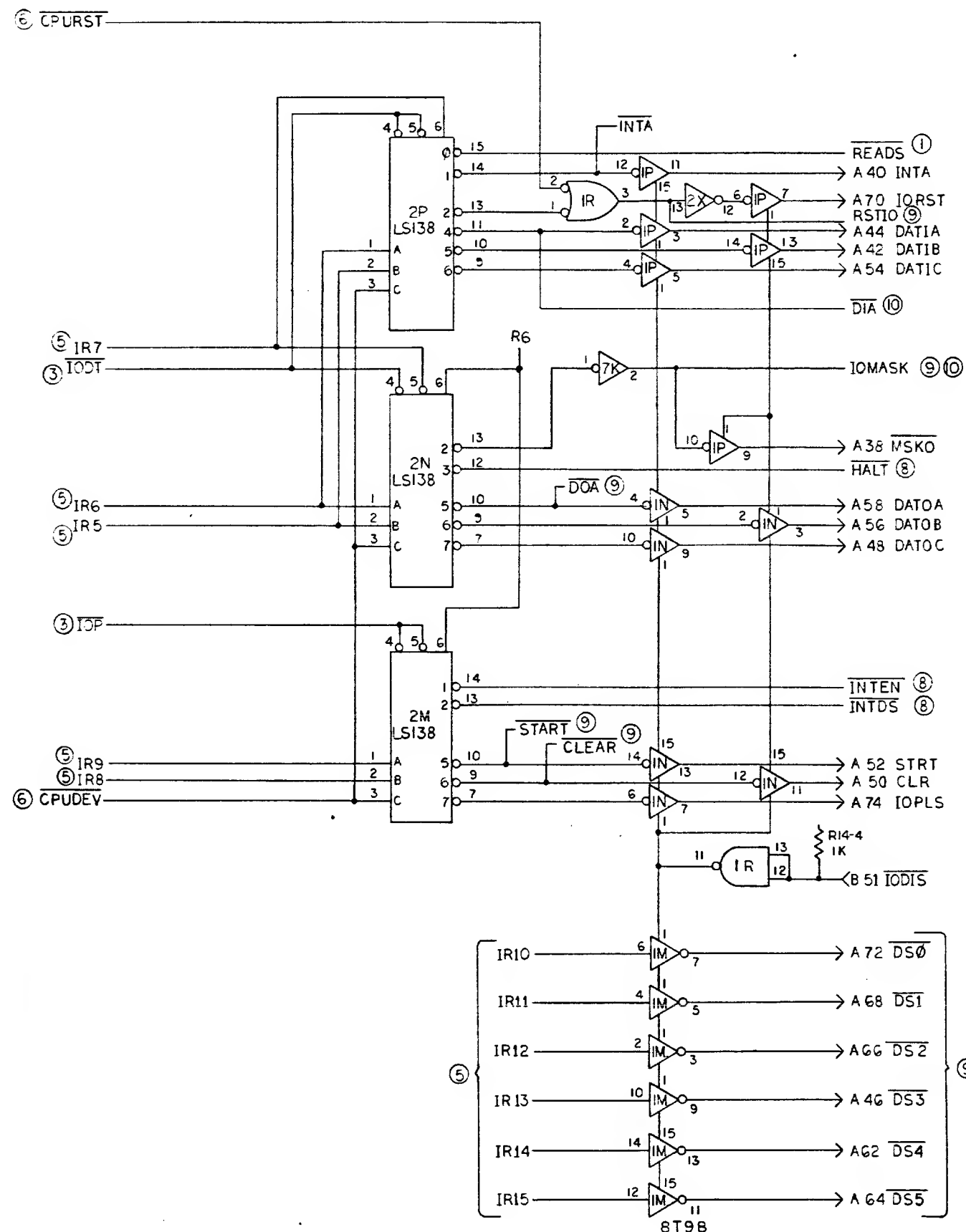


INSTRUCTION REGISTER, TIMING GENERATOR			
THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISS- SION OF COMPUTERVISION CORPORATION.			
MATERIAL:			
QUANTITY:			
DATE:			
BY:			
CHECKED:			
APPROVED:			
PART NUMBER:	NONE	REVISED:	SEE SHT. 1
NEXT ASSEMBLY:		DATE:	
QTY:		SCALE:	
COMPUTERVISION CORP.		BURLINGTON, MASS. 01803	
REMOVE ALL BUBBLES AND SHARP EDGES		SHEET 5 OF 10 SHEETS	



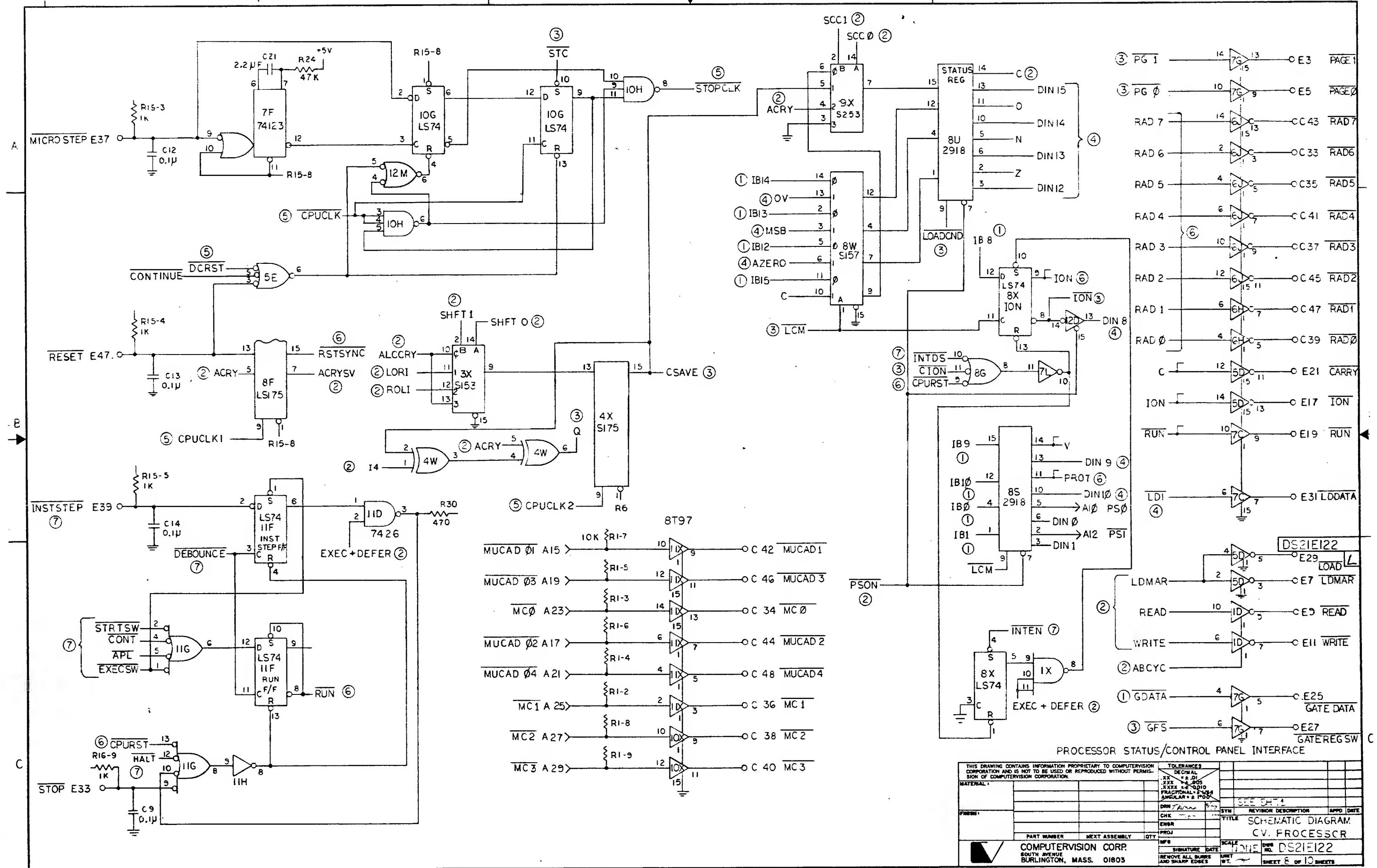
DS21E122

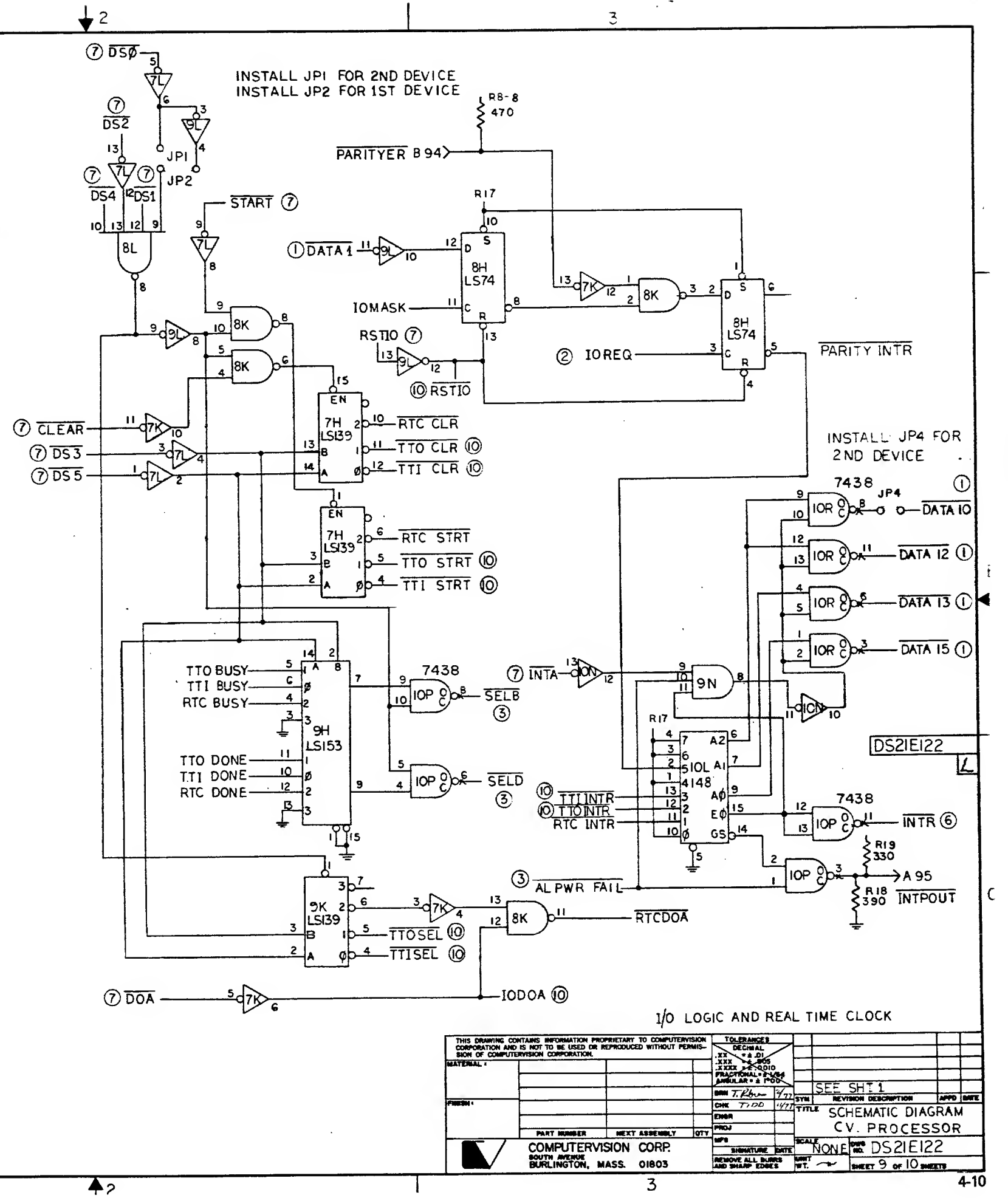
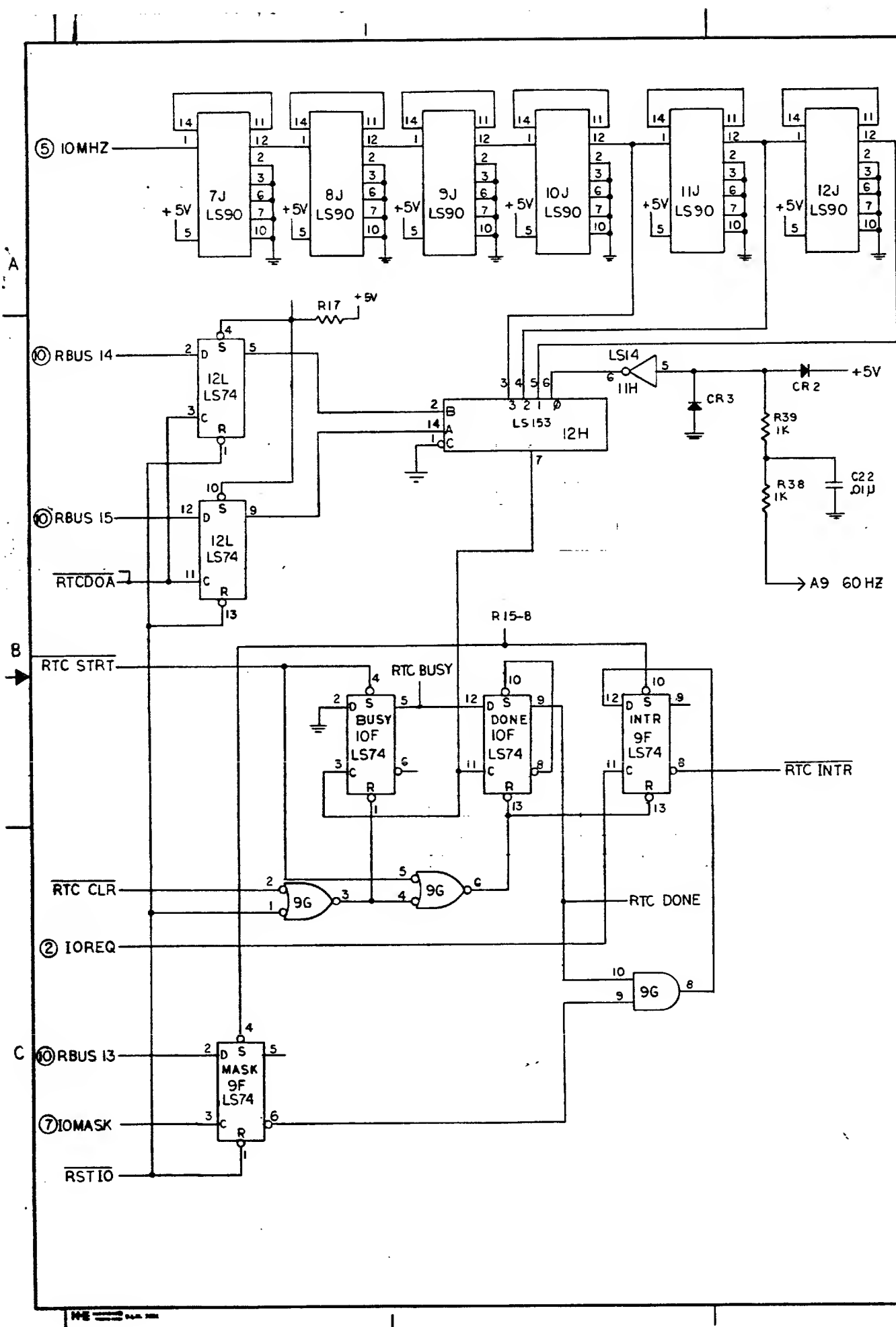
L



CONTROL PANEL FUNCTION ENCODE I/O PULSE GENERATOR

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.		TOLERANCES DECIMAL .XX ± .01 .XXX ± .005 XXX ± .010 FRACTIONAL 2-1/64 ANGULAR ± 1°00'	
MATERIAL		DRN	1/1/84
FINISH		CHK	1/1/84
		ENGR	
		PROJ	
PART NUMBER	NEXT ASSEMBLY	QTY	
COMPUTERVISION CORP. SOUTH AVENUE BURLINGTON, MASS. 01803		SIGNATURE	DATE
		REMOVE ALL BURRS AND SHARP EDGES	UNIT
		SCALE	DS2IE122
		SHEET	7 OF 10 SHEETS



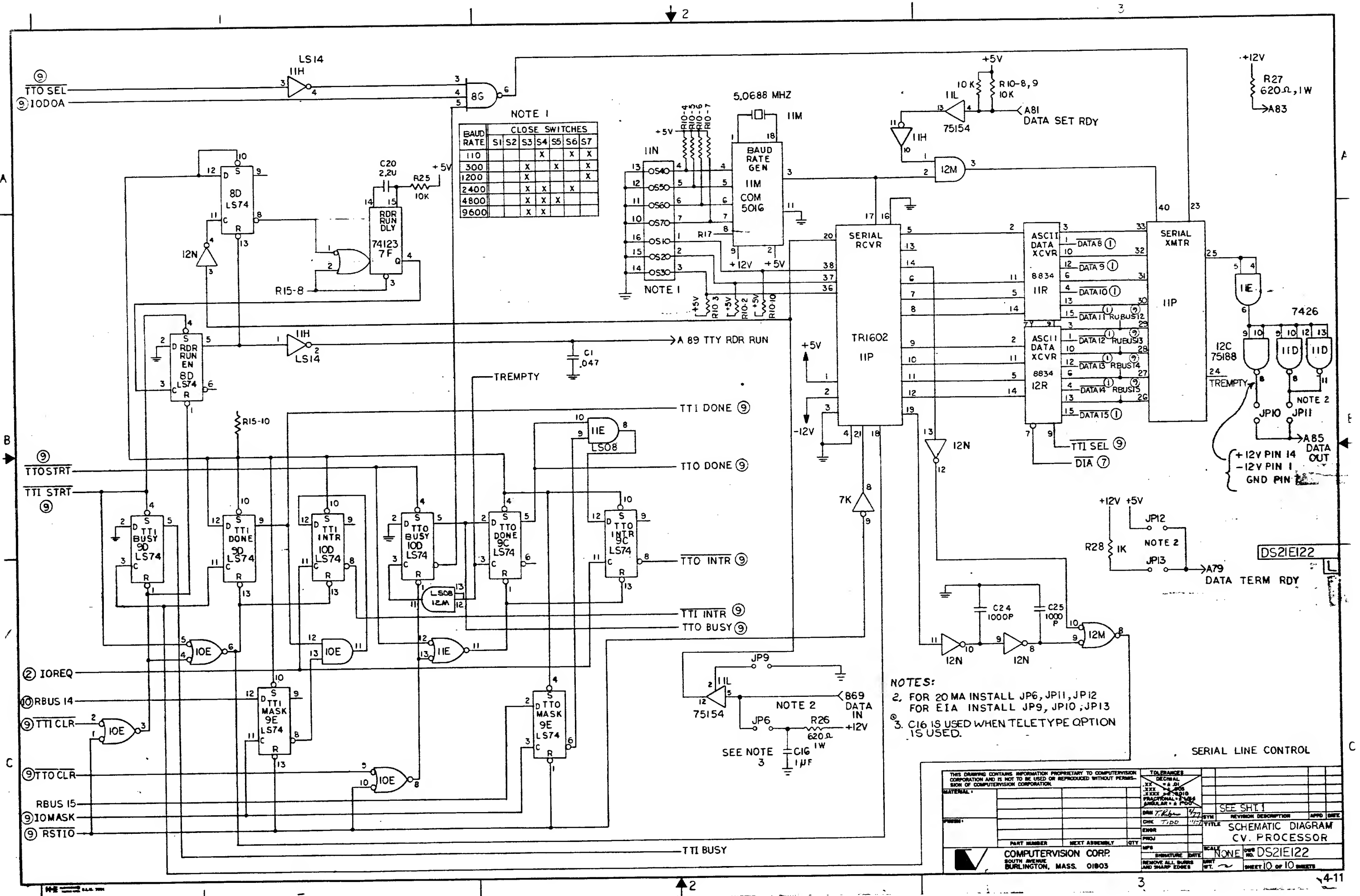


THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.			
TOLERANCES	DECIMAL		
.XX	±.01		
.XXX	±.005		
.XXXX	±.0010		
FRACTIONAL	±.0005		
ANGULAR	±.0001		
FINISH			
DATE	7/77	SYN	REVISION DESCRIPTION
CHK	TDD		
ENGR			
PROJ			
PART NUMBER	NEXT ASSEMBLY	QTY	SCALE
COMPUTERVISION CORP.			NONE
SOUTH AVENUE			
BURLINGTON, MASS. 01803			
REMOVE ALL BURS AND SHARP EDGES		DATE	
		BY	
		SHEET	9 OF 10 SHEETS

1/0 LOGIC AND REAL TIME CLOCK

SEE SH 1
SCHEMATIC DIAGRAM
CV. PROCESSOR

NO. DS2IE122



Microprogram Flow Chart

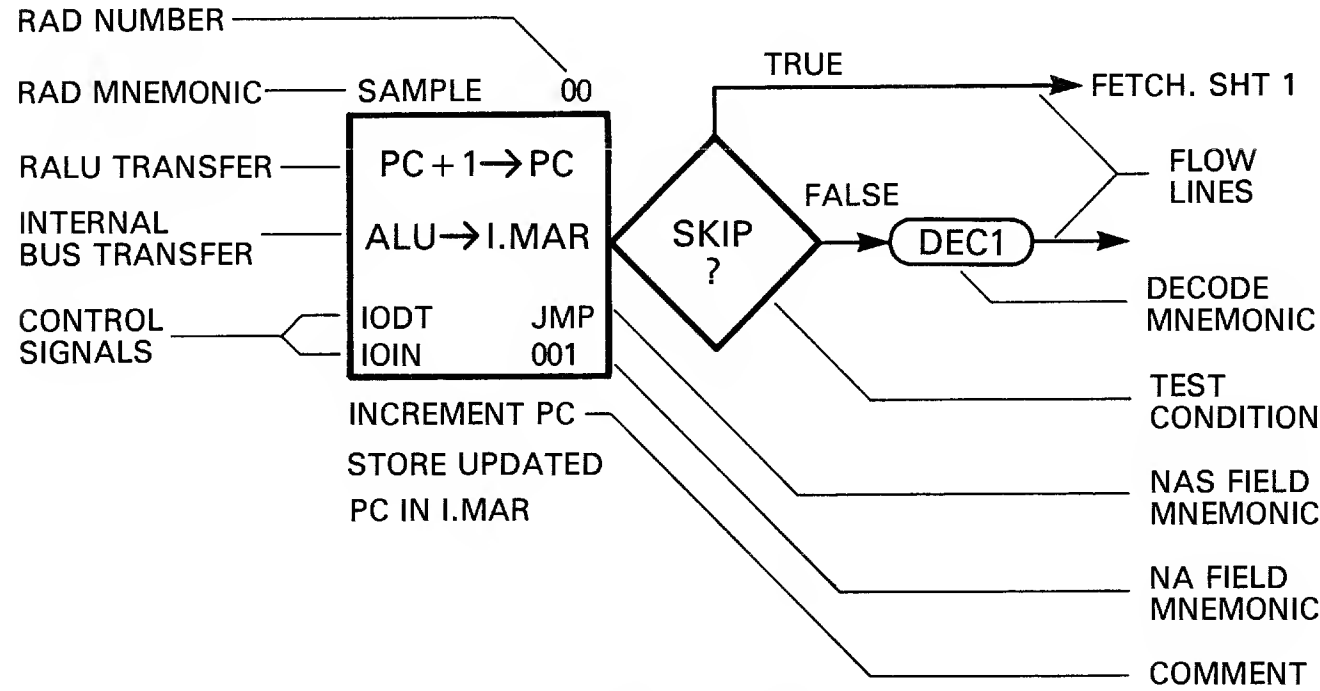
Instruction Fetch	4-13
Indirect Addressing	4-13
Move Data Instructions	4-14
Modify Memory Instructions	4-14
Jump Instructions	4-14
Arithmetic/Logic Instructions	4-15
Unsigned Integer Multiplication	4-16
Unsigned Integer Division	4-17
I/O Instructions	4-18
Interrupts	4-19
Data Channels	4-20
Pseudo-Instructions	4-21
Console Functions	4-21/4-22
Floating Point Interface	4-23—4-26
Microdiagnostics	4-27—4-39

Microprogram Flow Chart

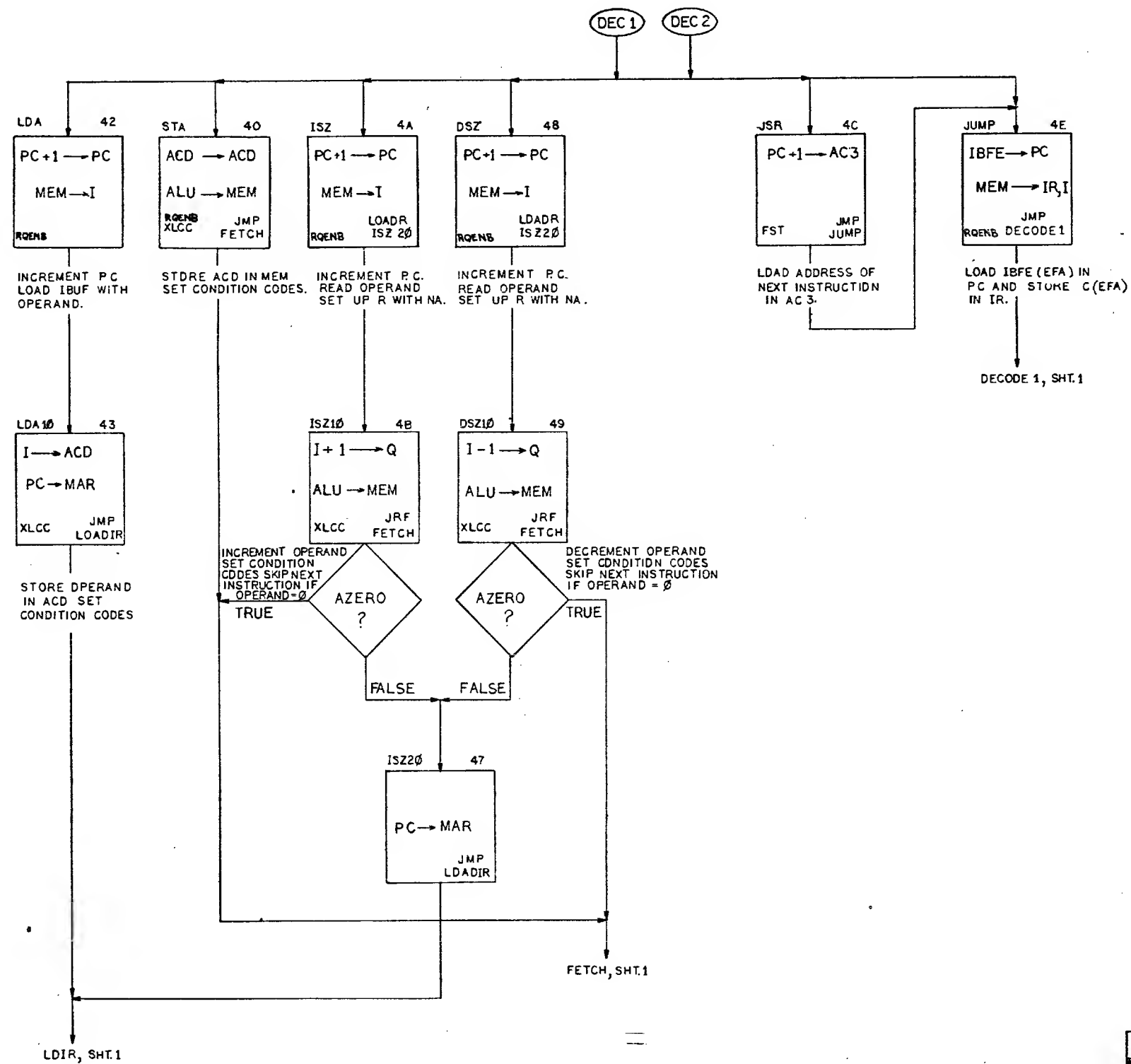
Interpreting the Flow Charts

The flow charts are divided into three sections. The first 10 pages (Sheets 1-10) show the operation code for the CPU. The next four pages (Sheets 11-14) show the operation code for the FPU. And the last 13 pages (Sheets 15-27) show the code for the microdiagnostics.

Symbols. The flow charts use three symbols: squares, diamonds, and ovals. The square represents the RAD currently being executed. The diamond represents a test condition. The oval indicates a decoding of the instruction. Flow lines connect these three symbols to indicate their sequential relationship. Mnemonics and comments accompanying each square also help to indicate the flow.

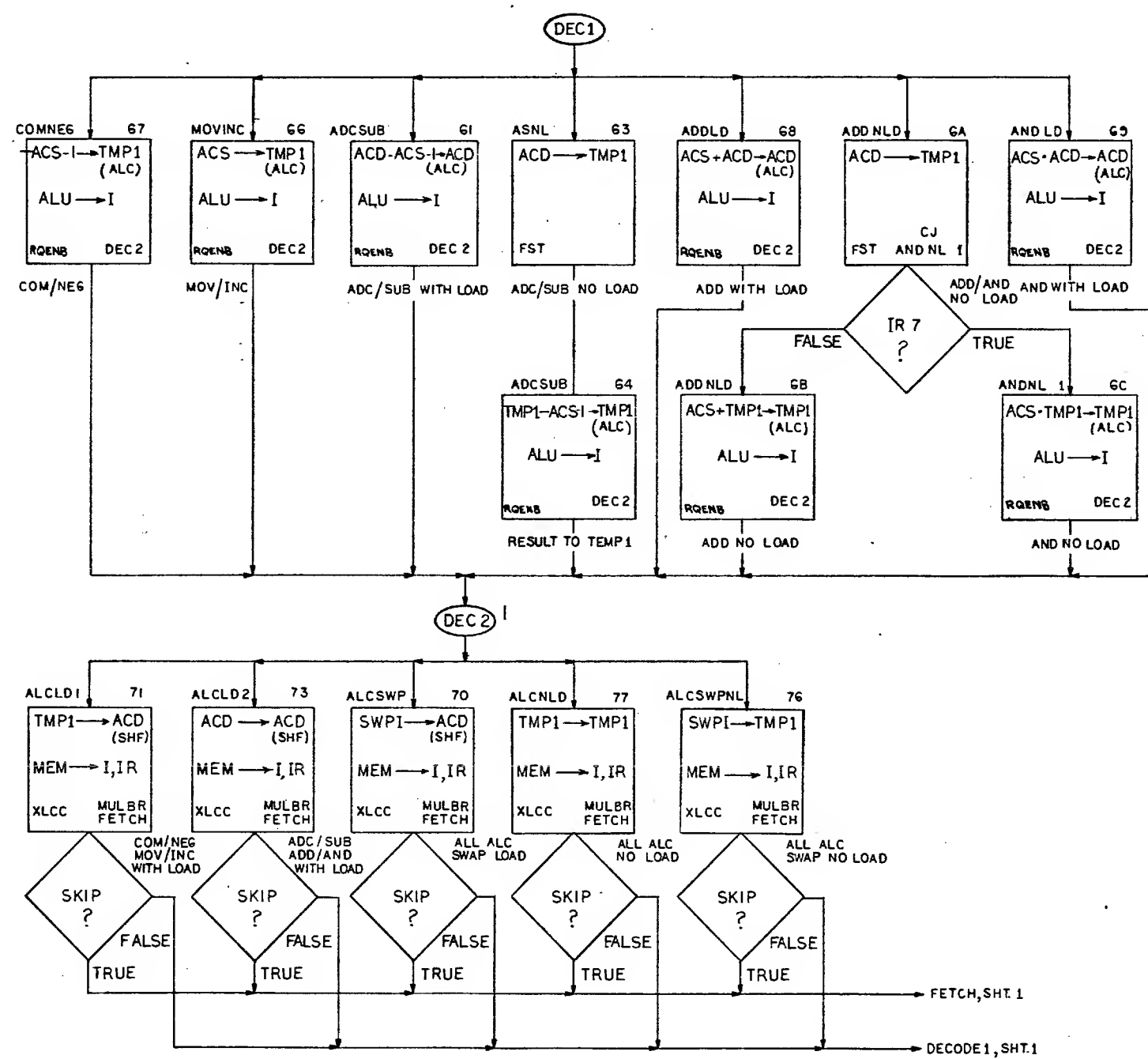


Flow Chart Symbols



MOVE DATA MODIFY MEMORY
AND JUMP INSTRUCTIONS

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.		TOLERANCES DECIMAL ±.01 FRACTIONAL ±.001 ANGULAR ±.001		DATE 8/77	
MATERIAL		CHK		SYN	
PART NUMBER		ENGR		TITLE	
NEXT ASSEMBLY		PROJ		CVP MICROPROGRAM FLOW CHARTS	
QTY		SCALE		DWG NO. DE 1E015	
COMPUTERVISION CORP. SOUTH AVENUE BURLINGTON, MASS. 01803		SIGNATURE DATE		SHEET 2 OF 27 SHEETS	

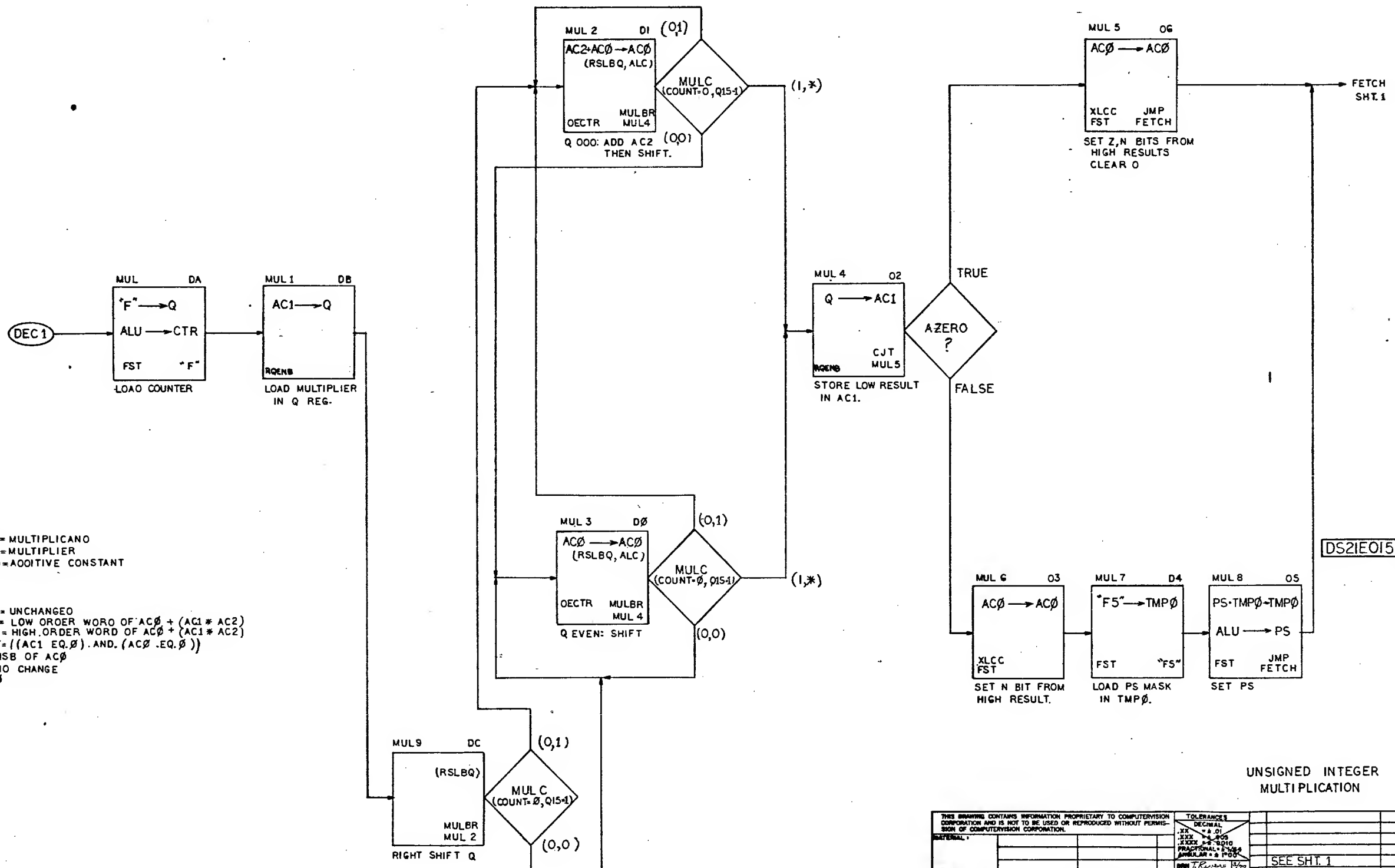


DS2IE015

E

ALC INSTRUCTIONS

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.				TOLERANCES DECIMAL XX ± .01 XXX ± .005 XXXX ± .0010 FRACTIONAL ± 1/64 ANGLES ± 1°		DATE 1977	
MATERIAL		QTY		SYN		REVISION DESCRIPTION	
PART NUMBER		NEXT ASSEMBLY		SCALE		TITLE	
COMPUTERVISION CORP. SOUTH AVENUE BURLINGTON, MASS. 01803		QTY		NONE		CVP MICROPROGRAM FLOW CHARTS	
SIGNATURE		DATE		UNIT		SHEET 3 OF 27 SHEETS	



INPUT:
 AC2= MULTIPLICAND
 AC1= MULTIPLIER
 AC0= ADDITIVE CONSTANT

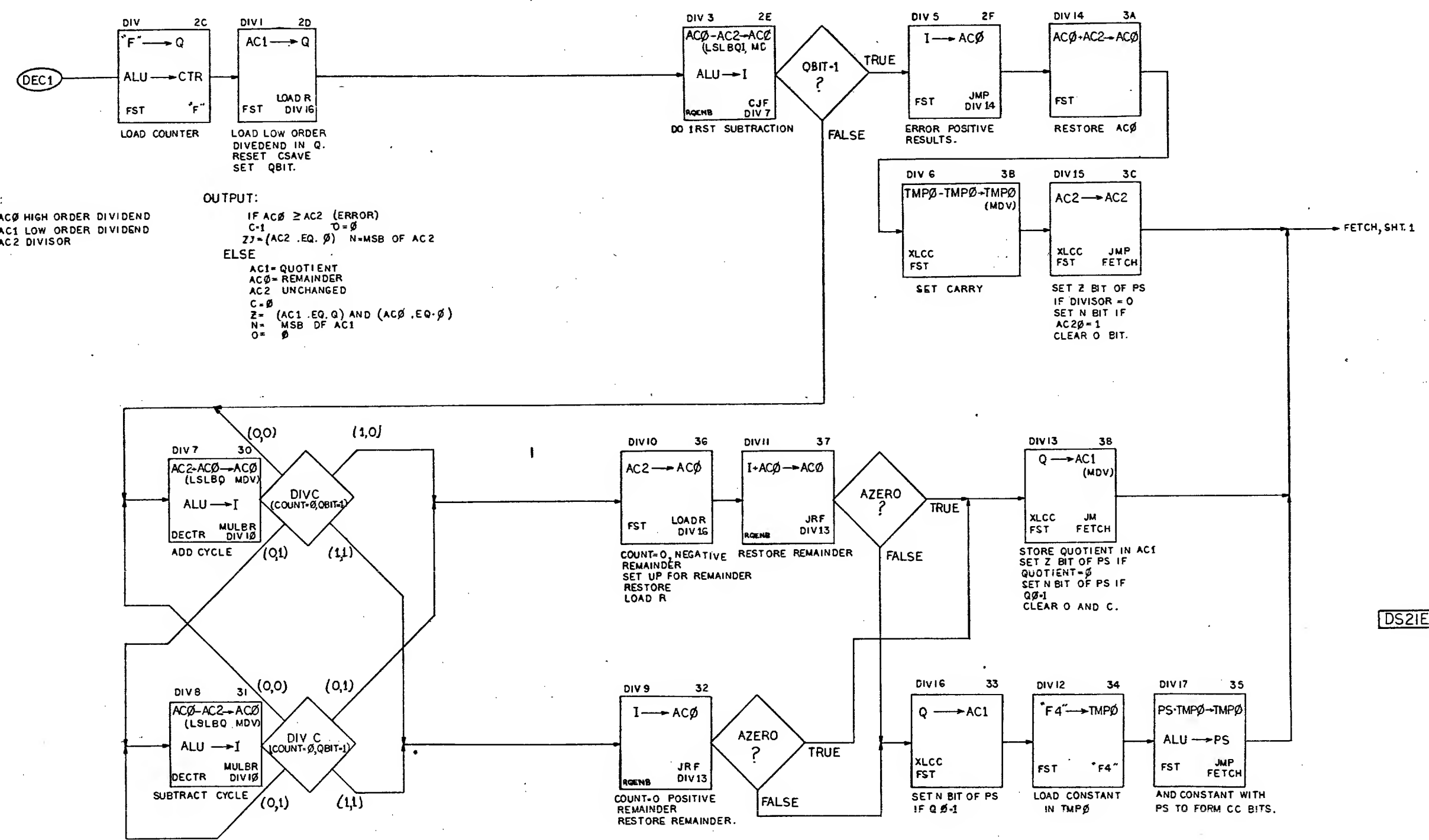
OUTPUT:
 AC2= UNCHANGED
 AC1= LOW ORDER WORD OF AC0 + (AC1 * AC2)
 AC0= HIGH ORDER WORD OF AC0 + (AC1 * AC2)
 ZBIT= ((AC1 EQ 0) .AND. (AC0 .EQ 0))
 N= MSB OF AC0
 C= NO CHANGE
 0= 0

UNSIGNED INTEGER MULTIPLICATION

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERSERV CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERSERV CORPORATION.				TOLERANCES DECIMAL XX ± .01 XXX ± .005 XXXX ± .0010 FRACTIONAL ± .0005 ANGULAR ± .0001		REVISION REV. 1 DATE 1/77		SYMBOL SYMBOL SYMBOL		REVISION DESCRIPTION CVP MICROPROGRAM FLOW CHARTS		APPROVAL DATE	
PART NUMBER NEXT ASSEMBLY QTY				MATERIAL SPECIFICATION QTY		DRAWN CHECKED ENGINEER PROJECT		SCALE NONE		DWG NO. DS21E015		SHEET 4 OF 27 SHEETS	
COMPUTERSERV CORP. SOUTH AVENUE BURLINGTON, MASS. 01803				SIGNATURE DATE		REMOVE ALL BURNS AND SHARP EDGES		UNIT WT.					

INPUT:
AC0 HIGH ORDER DIVIDEND
AC1 LOW ORDER DIVIDEND
AC2 DIVISOR

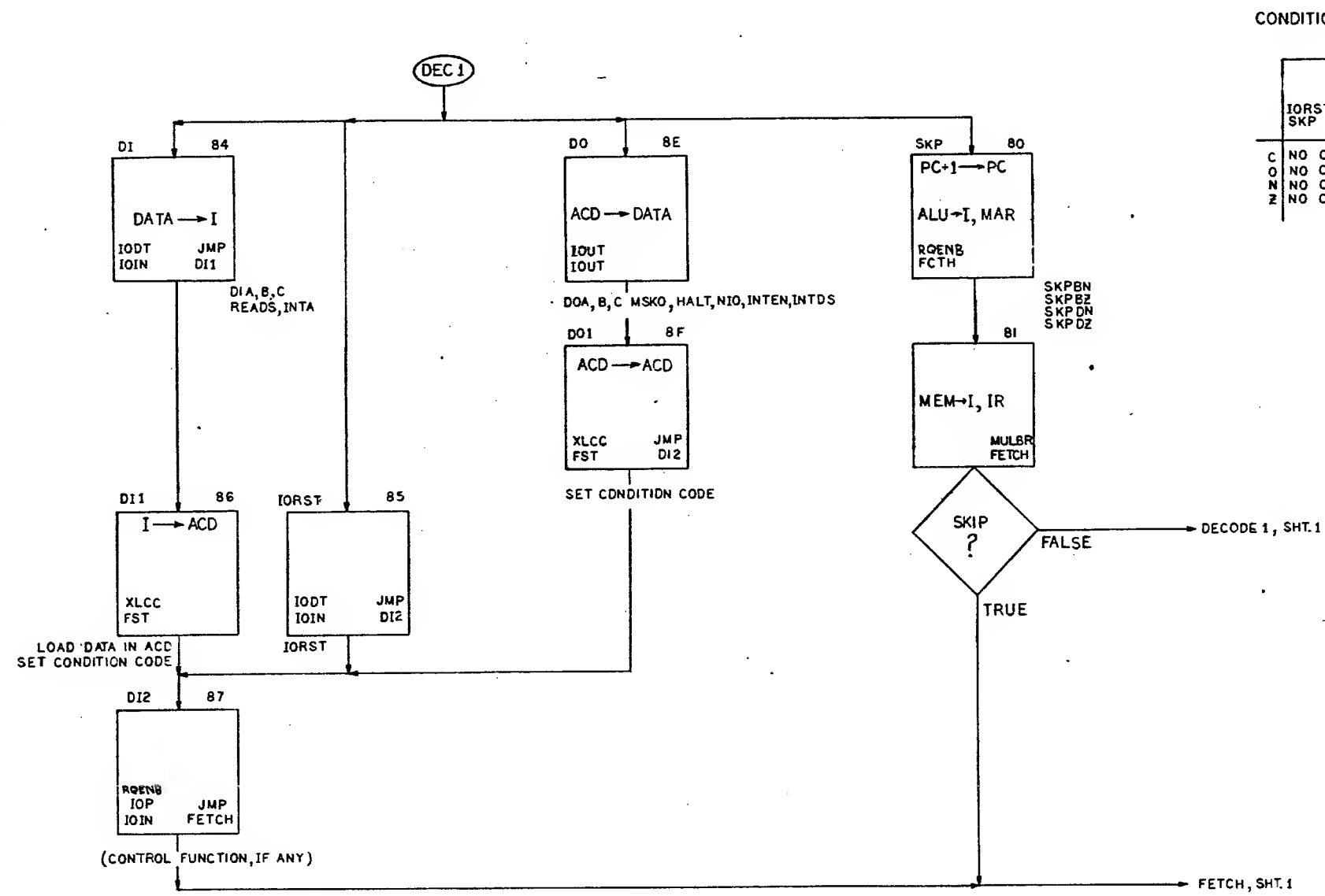
OUTPUT:
IF $AC0 \geq AC2$ (ERROR)
C=1
Z=0
Z= (AC2.EQ.0) N=MSB OF AC2
ELSE
AC1= QUOTIENT
AC0= REMAINDER
AC2 UNCHANGED
C=0
Z= (AC1.EQ.Q) AND (AC0.EQ.0)
N= MSB OF AC1
O=0



DS21E015
E

UNSIGNED INTEGER DIVISION

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.				TOLERANCES DECIMAL XXX ± .01 XXX ± .005 XXX ± .0010 FRACTIONAL ± 1/64 ANGULAR ± 1°	
MATERIAL:		FINISH:		DATE: 7/2/80	
PART NUMBER:		NEXT ASSEMBLY:		QTY:	
MFG:		PROJ:		SCALE: NONE	
SIGNATURE:		DATE:		DWG NO. DS21E015	
REMOVE ALL BURRS AND SHARP EDGES				SHEET 5 OF 27 SHEETS	



CONDITION CODE BITS FOR I/O

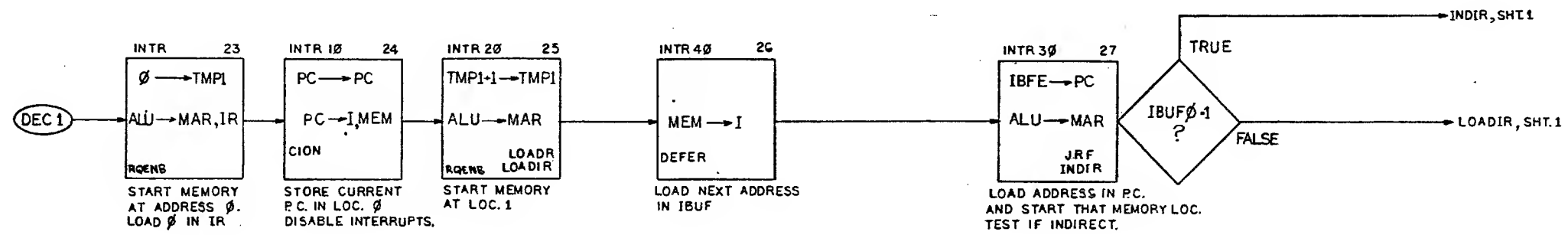
	IORST SKP	DIA, B, C READS INTA	DOA, B, C MSKO HALT NIO INTEN INTDS
C	NO CHANGE	NO CHANGE	NO CHANGE
O	NO CHANGE	NO CHANGE	NO CHANGE
N	NO CHANGE	MSB DATA IN	MSB DATA OUT
Z	NO CHANGE	DATA IN = 0	DATA OUT = 0

25521E015

E

I/O INSTRUCTIONS

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.				TOLERANCES DECIMAL X.XX ± .01 X.XXX ± .005 FRACTIONAL ± .004 ANGULAR ± 1°00'	
MATERIAL	QUANTITY	DESCRIPTION	DATE	SYN	SEE SHT. 1
DESIGN	CHKD	ENGR	PROJ	DATE	REVISION DESCRIPTION
PART NUMBER	NEXT ASSEMBLY	QTY	DATE	SCALE	APPD DATE
COMPUTERVISION CORP. SOUTH AVENUE BURLINGTON, MASS. 01803			SIGNATURE	DATE	SCALE
REMOVE ALL BURRS AND SHARP EDGES			WT.	DRW NO.	SHEET 5 of 27 SHEETS

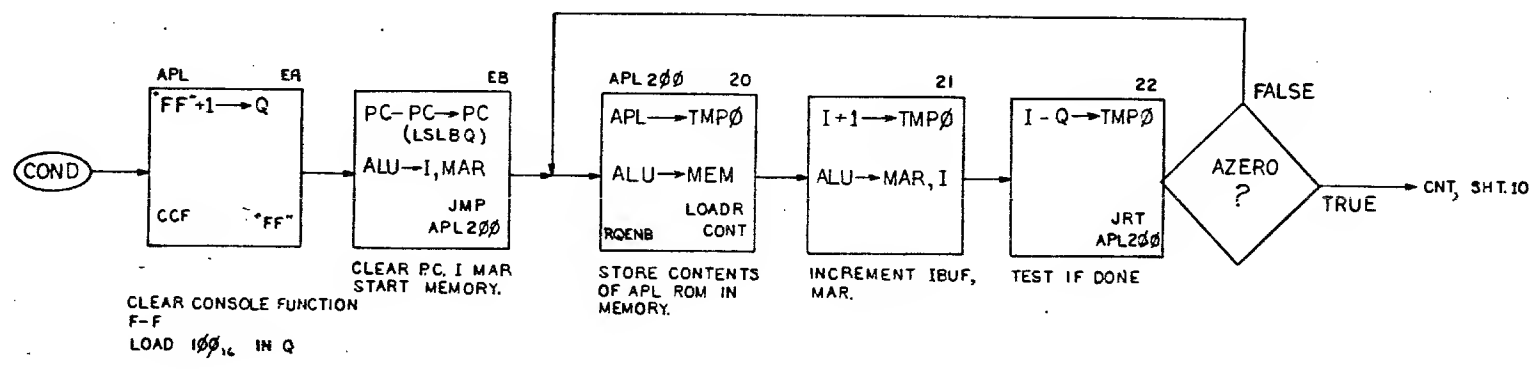
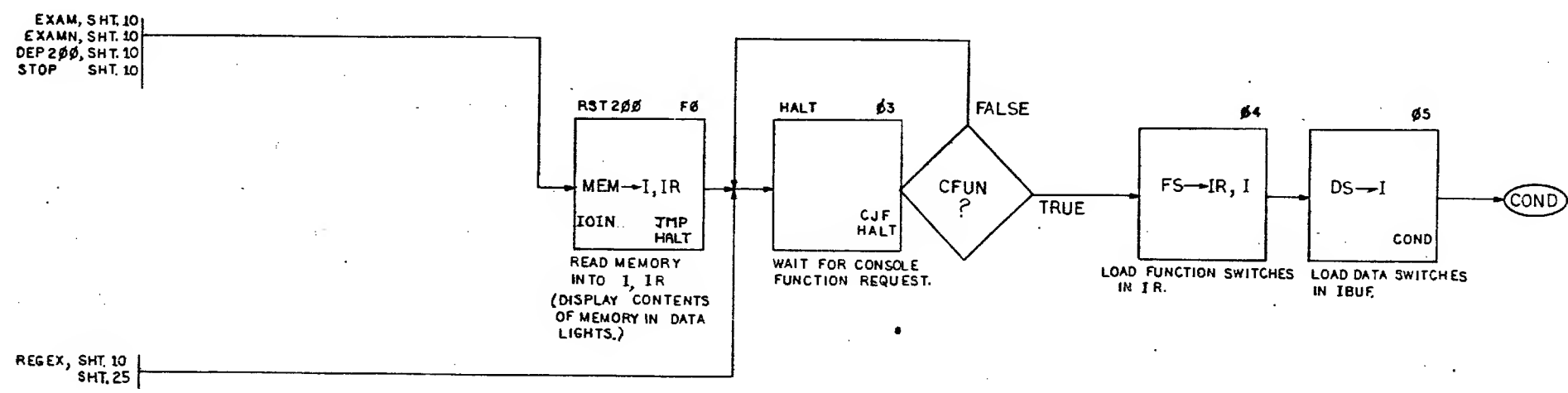


DS2IE015

E

INTERRUPT

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.				TOLERANCES DECIMAL .XX ± .01 .XXX ± .005 .XXXX ± .0010 FRACTIONAL ± 1/16 ANGULAR ± 1°00'	
MATERIAL				DRN T. Kline	1/71
FINISH				CHK	
				ENGR	
				PROJ	
PART NUMBER	NEXT ASSEMBLY	QTY	MFR	SIGNATURE	DATE
COMPUTERVISION CORP					
SOUTH AVENUE BURLINGTON, MASS. 01803			SCALE NONE REMOVE ALL BURRS AND SHARP EDGES		
TITLE CVP MICROPROGRAM FLOW CHART				SHEET 7 OF 27 SHEETS	

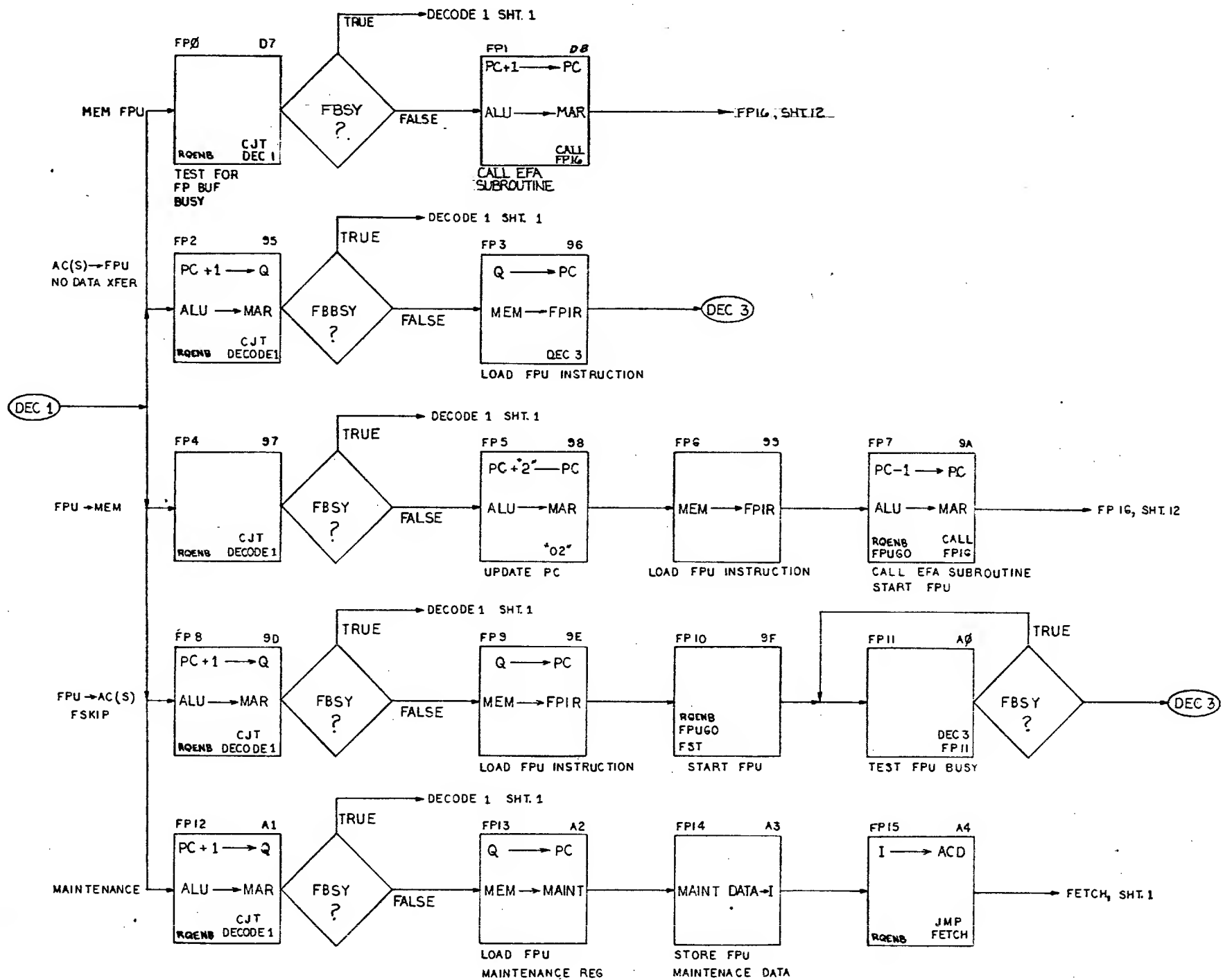


DS2IE015
E

CONSOLE FUNCTIONS I
(RESET, HALT STATE, APL)

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.				TOLERANCES DECIMAL XX ± .01 XXX ± .005 XXXX ± .0010 FRACTIONAL ± .004 ANGULAR ± .000	
MATERIAL				SYN	REVISION DESCRIPTION
FINISH				CHK	APPRO DATE
				ENGR	
				PROJ	
				WFS	
PART NUMBER NEXT ASSEMBLY QTY				TITLE	
COMPUTERVISION CORP. SOUTH AVENUE BURLINGTON, MASS. 01803				CVP MICROPROGRAM FLOW CHART	
SIGNATURE DATE SCALE				UNIT	
REMOVE ALL BURRS AND SHARP EDGES				SHEET 9 OF 17 SHEETS	

8 7 6 5 4 3 2 1

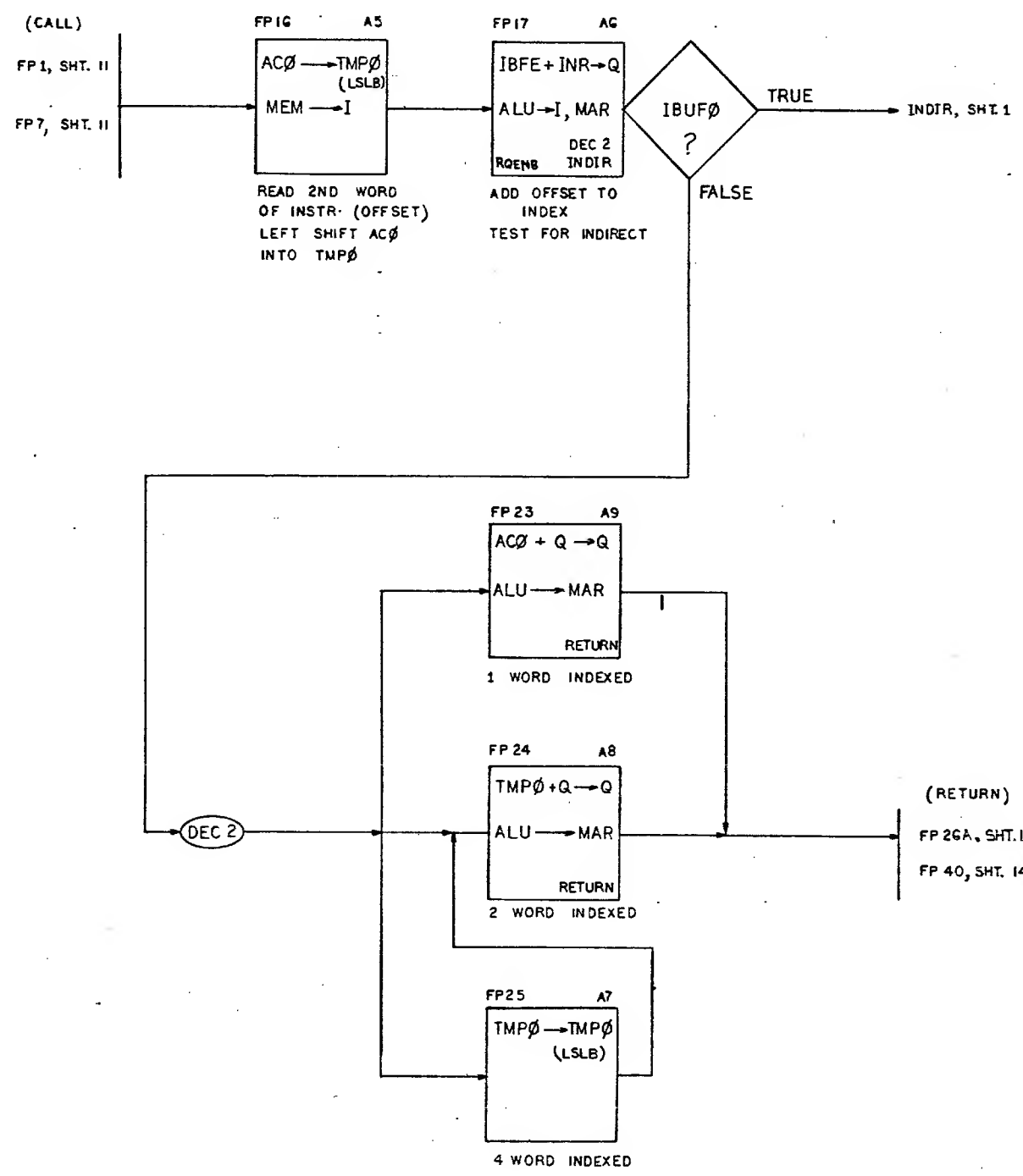


DS2IE015

FLOATING POINT INTERFACE
(ENTRY POINTS)

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.		TOLERANCES DECIMAL XXX ± .01 XXX ± .005 FRACTIONAL ± .005 ANGULAR ± .5°		SEE SH. 1	
MATERIAL:		CHK		REV	
FURN:		ENGR		DATE	
PART NUMBER		NEXT ASSEMBLY		QTY	
COMPUTERVISION CORP. 201 Burlington Road Bedford, Massachusetts 01730		SIGNATURE		DATE	
SCALE		UNIT		SHEET 11 OF 27 SHEETS	

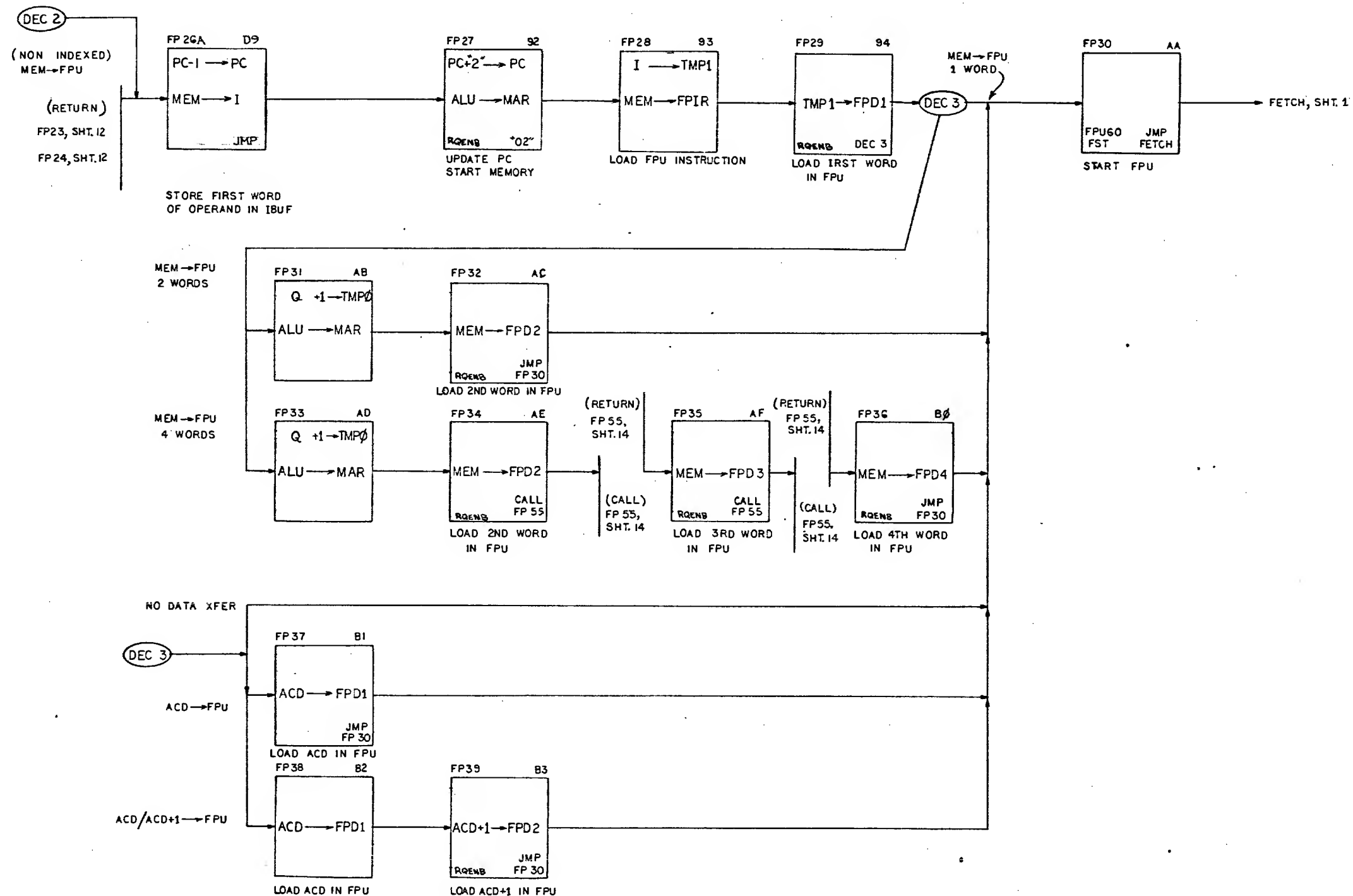
8 7 6 5 4 3 2 1



DS21E015

FLOATING POINT INTERFACE
(EFA)

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.		TOLERANCES DECIMAL .XX ±.01 .XXX ±.005 .XXXX ±.0010 FRACTIONAL 3/16 ANGULAR 1/2 DEG			
MATERIAL:		DRN T.H. Jones	8/77	SYN	SEE SHT. I
DESIGN:		CHK		REVISION DESCRIPTION	APPO DATE
		ENGR			
		PROJ			
PART NUMBER	NEXT ASSEMBLY	QTY	SCALE	TITLE CVP MICROPROGRAM FLOW CHART	
COMPUTERVISION CORP. 201 Burlington Road Bedford, Massachusetts 01730			NONE	DWG NO. DS21E015	
REMOVE ALL BURRS AND SHARP EDGES			SIGNATURE DATE	UNIT	SHEET 12 OF 27 SHEETS



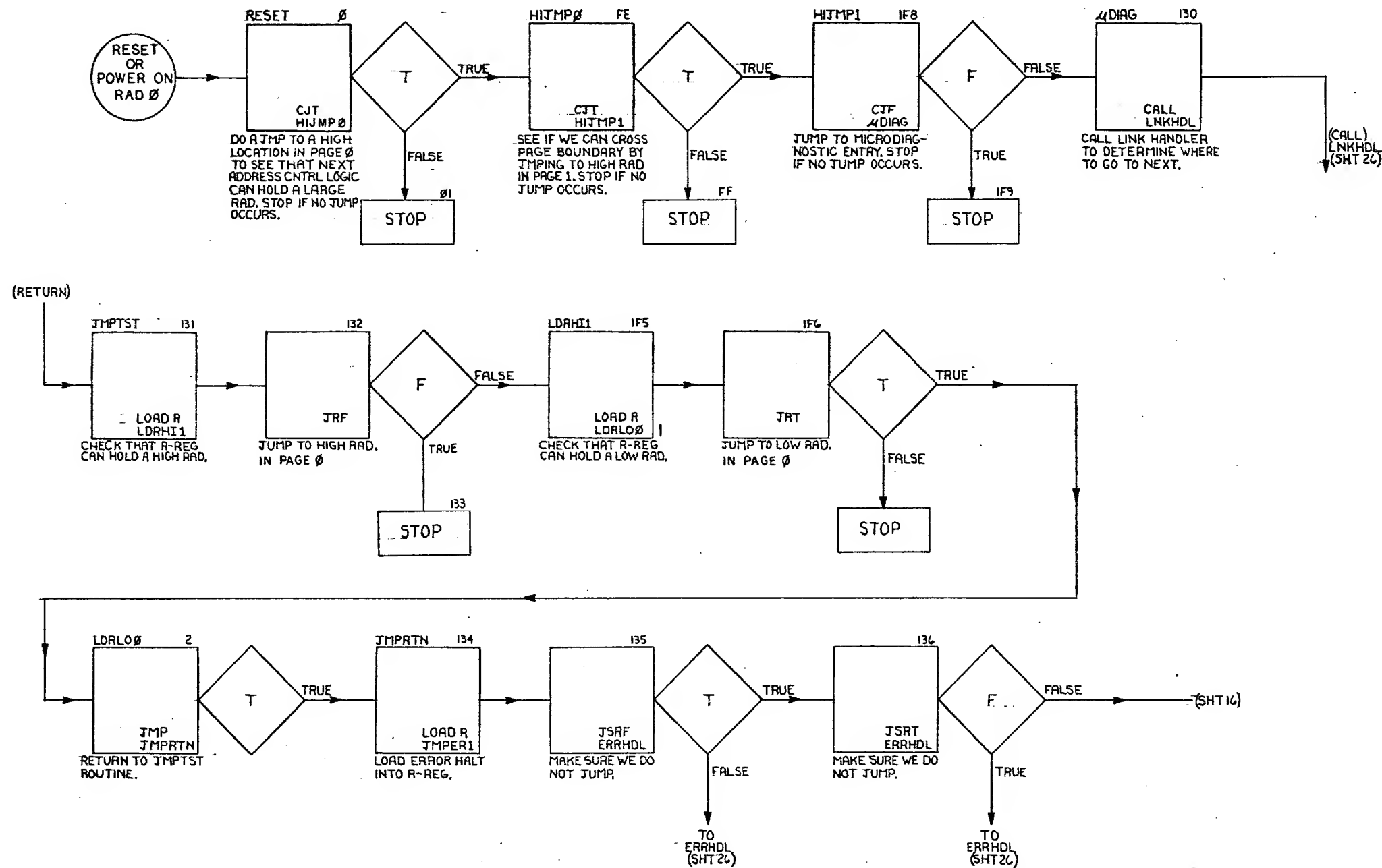
DS-11E015

E

FLOATING POINT INTERFACE
(MEM to FPU, ACD (S) to FPU,
NO DATA XFER)

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.				TOLERANCES DECIMAL XX ± .01 XXX ± .005 XXXX ± .0010 FRACTIONAL: 1/8, 1/16, 1/32 ANGULAR: ± 30°			
MATERIAL				BYN	DATE	SYN	REVISION DESCRIPTION
QTY				CHK			
PROJ				ENGR			
PART NUMBER		NEXT ASSEMBLY	QTY	PROJ			
COMPUTERVISION CORP. SOUTH AVENUE BURLINGTON, MASS. 01803				SIGNATURE DATE		SCALE	
				REMOVE ALL DIMS AND SHARP EDGES		UNIT WT. ~ SHEET 13 OF 27 SHEETS	

8 7 6 5 4 3 2 1

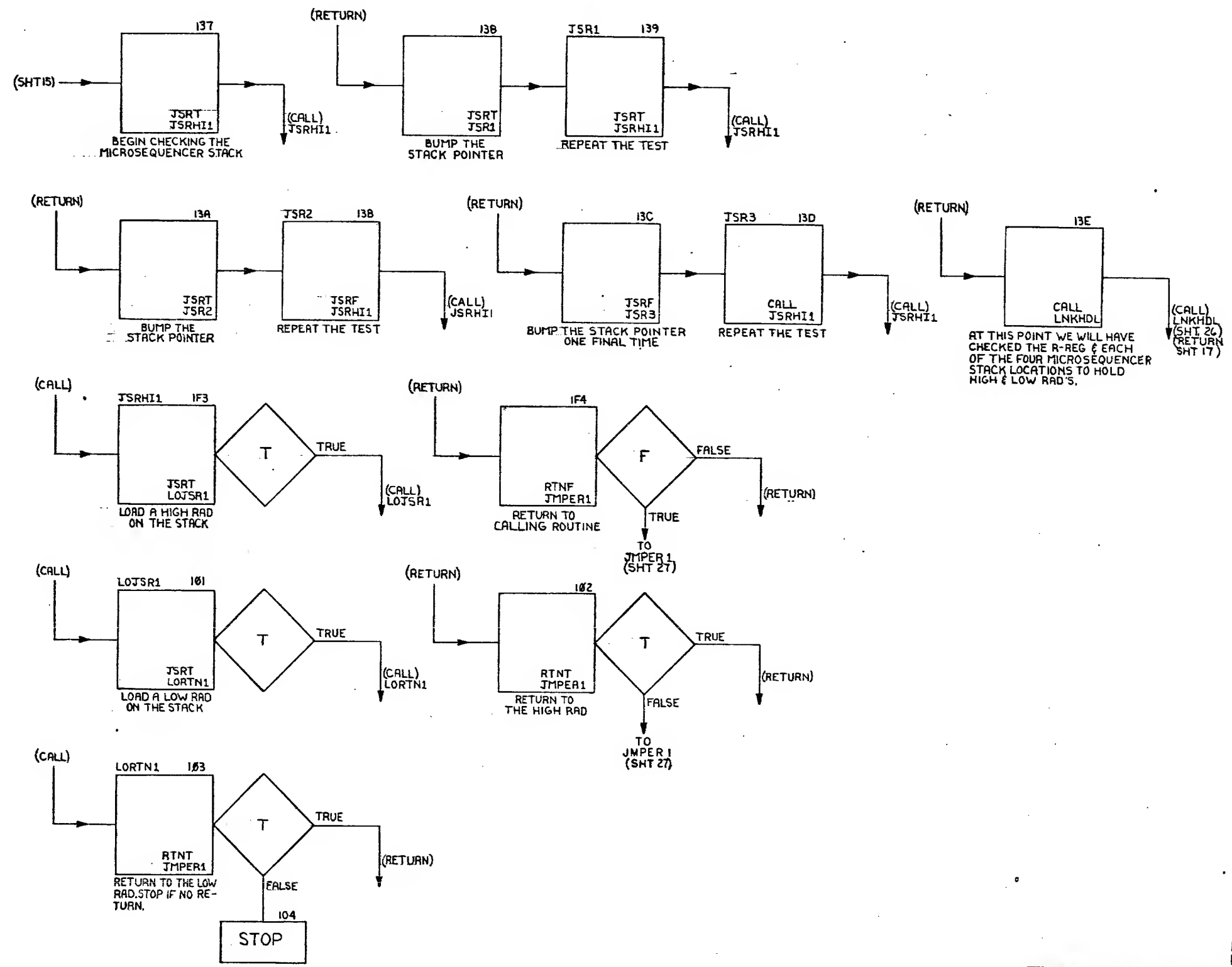


DS21E015

MICRODIAGNOSTIC ENTRY
NEXT ADDRESS CONTROL
LOGIC TEST

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.		TOLERANCES DECIMAL -XX ±.01 -XXX ±.005 -XXXX ±.0010 FRACTIONAL ± 1/64 ANGULAR ± .1°		SEE SHEET 1	
MATERIAL		CHK		SYM	
PART NUMBER		NEXT ASSEMBLY		QTY	
COMPUTERVISION CORP. 201 Burlington Road Bedford, Massachusetts 01730		SIGNATURE		DATE	
REMOVE ALL BURRS AND SHARP EDGES		SCALE		DWS NO. DS21E015	
		UNIT		SHEET 15 OF 27 SHEETS	

8 7 6 5 4 3 2 1



NEXT ADDRESS CONTROL
LOGIC TEST

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.		TOLERANCES DECIMAL XX = ± .01 XXX = ± .005 XXXX = ± .0010 FRACTIONAL = 1/64 ANGULAR = ± .000			
MATERIAL:		CHK		DATE	
PROJ:		ENGR:		DATE	
PART NUMBER	NEXT ASSEMBLY	QTY			
COMPUTERVISION CORP. 201 Burlington Road Bedford, Massachusetts 01730			TITLE FLOW CHARTS CVP MICROPROGRAM DWG NO. DS21E015 SHEET 16 OF 27 SHEETS		

8 7 6 5 4 3 2 1

D

D

C

C

B

B

A

A

(RETURN)

THIS SUBTEST CHECKS THE AZERO
TEST CONDITION AND SOME BASIC ALU
FUNCTIONS & DATA PATHS.

AZERTST 13F
LOAD R
ALUER1
LOAD R WITH ERROR
HALT ADDRESS.

-1 TO B0
ALU → I
JSRT
ERRHDL
INIT B0 & IBUF AND
CHECK AZRO ON A NON-
ZERO ALU CONDITION.

AZRO

FALSE

CLR B0
ALU → I
JSRT
ERRHDL
CLEAR B0 & IBUF AND
CHECK AZRO FOR A
ZERO ALU OUTPUT
CONDITION. WE NOW
HAVE SOME CONFIDENCE
THAT AZRO CONDITION
WORKS. A MORE EXTEN-
SIVE TEST WILL BE
DONE LATER, ON AZRO.

AZRO

TRUE

TO
ERRHDL
(SHT 2C)

TO
ERRHDL
(SHT 2C)

THE FOLLOWING SERIES OF TESTS CHECKOUT THE DATA PATH FROM THE ALU TO
THE IBUF THRU THE INTERNAL BUS FOR BIT PICK-UPS AND DROPS. B-PORT LOADS
ARE ALSO TESTED. ALSO SOME BASIC ALU FUNCTIONS, INVERT, NEGATE (2'S COMPLI-
MENT), INCREMENT AND DECREMENT ARE TESTED.

DATA1 142
IBUF → Q
(IBUF = 0)
ALU → IBUF
JSRT
ERRHDL
CHECK DATA PATH FROM
IBUF TO ALU OUT WITH ALL
ZEROS. BRANCH IF ERROR.

AZRO

TRUE

TO
ERRHDL
(SHT 2C)

B0+1 → B0
(B0 = 1)
ALU → IBUF
JSRT
ERRHDL
CHECK INCREMENT
INSTRUCTIONS WITH
NO CARRY. BRANCH IF
ALU OUT = 0; ERROR.

AZRO

FALSE

TO
ERRHDL
(SHT 2C)

NEGTS1 144
-B0 → B0
(B0 = -1)
ALU → I
JSRT
ERRHDL
CHECK NEGATE INSTRU-
CTIONS FOR BITS STUCK
AT "0". BRANCH IF RE-
SULT IS ZERO; ERROR.

AZRO

FALSE

TO
ERRHDL
(SHT 2C)

B0+1 → B0
(B0 = 0)
ALU → I
JSRT
ERRHDL
CHECK INCREMENT
INSTRUCTIONS WITH
ALL CARRIES. BRANCH
IF ALU OUT ≠ 0; ERROR.

AZRO

TRUE

TO
ERRHDL
(SHT 2C)

NEGTS2 146
-B0 → B0
(B0 = 0)
ALU → I
JSRT
ERRHDL
CHECK NEGATE INSTRU-
CTIONS FOR BITS STUCK
AT "1". BRANCH IF RE-
SULT IS ≠ ZERO; ERROR.

AZRO

TRUE

TO
ERRHDL
(SHT 2C)

DATA2 147
-1 → B0
ALU → I
JSRT
ERRHDL
INIT IBUF WITH ALL "1'S".

AZRO

FALSE

TO
ERRHDL
(SHT 2C)

IBUF+1 → Q
(Q = 0)
ALU → I
JSRT
ERRHDL
CHECK DATA PATH FROM
IBUF TO ALU OUT WITH
ALL "1'S". INCR DATA &
BRANCH IF ≠ 0; ERROR.

AZRO

TRUE

TO
ERRHDL
(SHT 2C)

DECTS1 149
B-1 → B0
(B0 = -2)
ALU → I
JSRT
ERRHDL
CHECK DECREMENT
INSTRUCTIONS WITH
CARRIES, IE,
11111+11111=111110=-2
BRANCH IF = 0; ERROR.

AZRO

FALSE

TO
ERRHDL
(SHT 2C)

NOT B0 → B0
(B0 = 1)
ALU → I
JSRT
ERRHDL
CHECK "1'S" COMPLIMENT
INSTRUCTIONS. BRANCH
IF RESULT = 0; ERROR.

AZRO

FALSE

TO
ERRHDL
(SHT 2C)

DECTS2 14B
B0-1 → B0
(B0 = 0)
ALU → I
JSRT
ERRHDL
CHECK DECREMENT
INSTRUCTION WITH
NO CARRY.

AZRO

TRUE

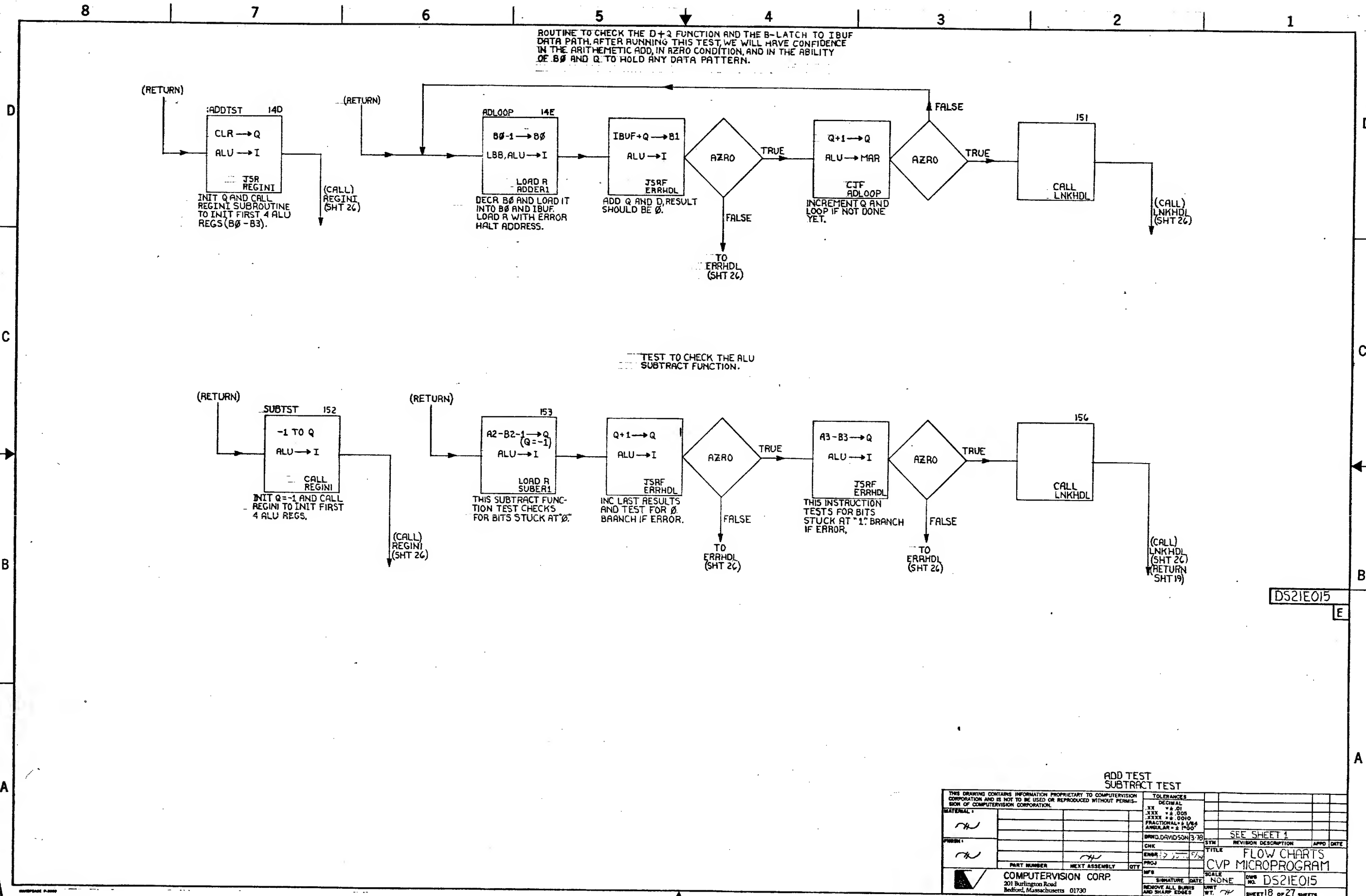
TO
ERRHDL
(SHT 2C)

14C
CALL
LNKHDL

(CALL)
LNKHDL
(SHT 2C)
(RETURN
SHT 1B)

AZRO TEST
DATA PATH AND BASIC
ALU FUNCTION TEST

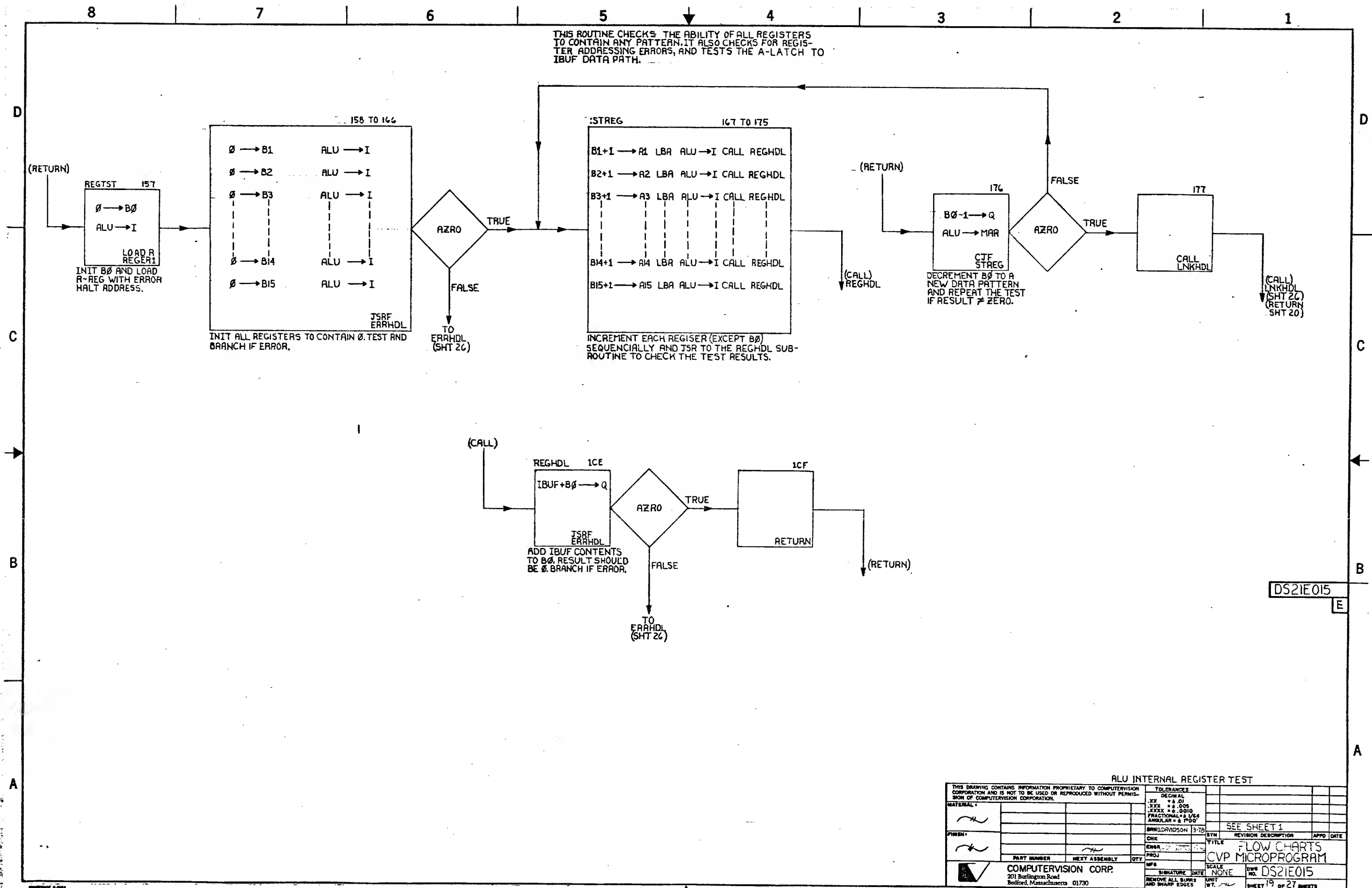
THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMIS- SION OF COMPUTERVISION CORPORATION.		TOLERANCES DECIMAL XX = ± .01 XXX = ± .005 XXX = ± .0010 FRACTIONAL ± 1/64 ANGULAR ± .000			
MATERIAL:		BRND/DAVIDSON 3-78	SYM	REVISION DESCRIPTION	APPRO DATE
CHK:		CHK		TITLE	
ENGR:		ENGR		FLOW CHARTS	
PROJ:		PROJ		CVP MICROPROGRAM	
APP:		APP		SCALE NONE	
COMPUTERVISION CORP. 201 Burlington Road Bedford, Massachusetts 01730		SIGNATURE DATE		OWN NO. DS21E015	
REMOVE ALL BURRS AND SHARP EDGES		UNIT WT.		SHEET 17 OF 27 SHEETS	



DS21E015
E

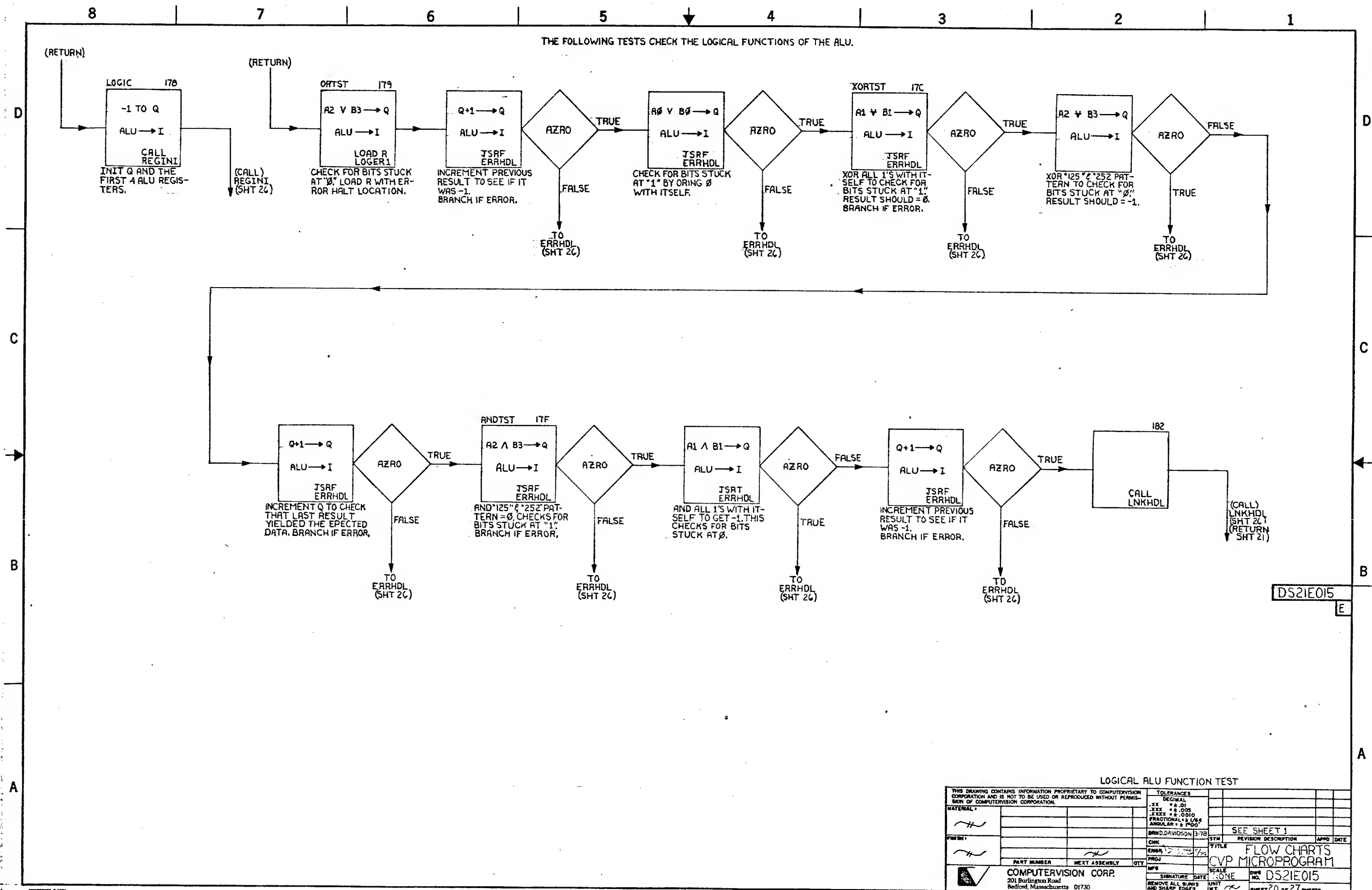
ADD TEST
SUBTRACT TEST

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.				TOLERANCES DECIMAL XX = ±.01 XXX = ±.005 XXXX = ±.0010 FRACTIONAL = ± 1/64 ANGULAR = ± .005°			
MATERIAL				BRAD DAVIDSON	3/78	SEE SHEET 1	
PERSON				CHK		SYM	REVISION DESCRIPTION
				ENGR	3/78		APPRO DATE
				PROJ			
PART NUMBER		NEXT ASSEMBLY	QTY				
COMPUTERVISION CORP. 201 Burlington Road Bedford, Massachusetts 01730				SCALE NONE		DWG NO. DS21E015	
REMOVE ALL BURNES AND SHARP EDGES				SIGNATURE DATE		SHEET 18 OF 27 SHEETS	



ALU INTERNAL REGISTER TEST

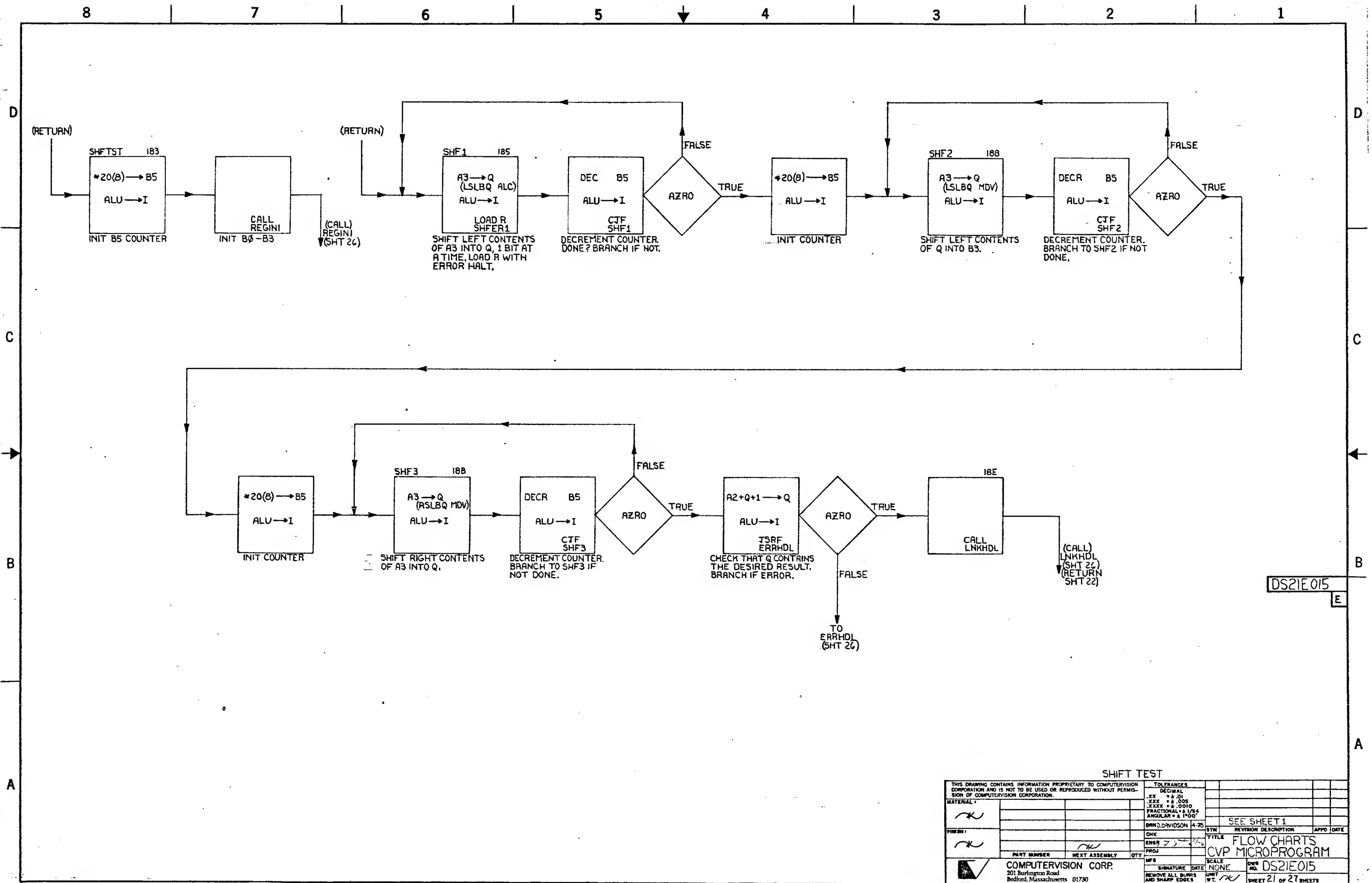
THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.				TOLERANCES DECIMAL .XX ± .01 .XXX ± .005 .XXXX ± .0010 FRACTIONAL ± 1/64 ANGULAR ± .001°							
MATERIAL:				DRAWN: B. DAVIDSON 3-78				SEE SHEET 1			
FINISH:				CHK: [Signature]				SYM: [Signature]			
PART NUMBER				NEXT ASSEMBLY				QTY			
COMPUTERVISION CORP. 201 Burlington Road Bedford, Massachusetts 01730				SCALE: NONE				DWG NO: DS21E015			
REMOVE ALL BURRS AND SHARP EDGES				SIGNATURE DATE				SHEET 19 OF 27 SHEETS			



DS21E015

LOGICAL ALU FUNCTION TEST

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.				TOLERANCES DECIMAL .XX ±.01 .XXX ±.005 .XXXX ±.0010 FRACTIONAL ± 1/64 ANGULAR ± .000"			
MATERIAL				BRWD.DAVIDSON	3-78	SEE SHEET 1	
FINISH				CHK		REVISION DESCRIPTION APPD DATE	
				ENG		TITLE FLOW CHARTS	
				PROJ		CVP MICROPROGRAM	
PART NUMBER		NEXT ASSEMBLY	QTY	WFO		SCALE	DWG NO. DS21E015
COMPUTERVISION CORP. 201 Burlington Road Bedford, Massachusetts 01730				SIGNATURE	DATE	UNIT	SHEET 20 OF 27 SHEETS
REMOVE ALL BURRS AND SHARP EDGES							



8

7

6

5

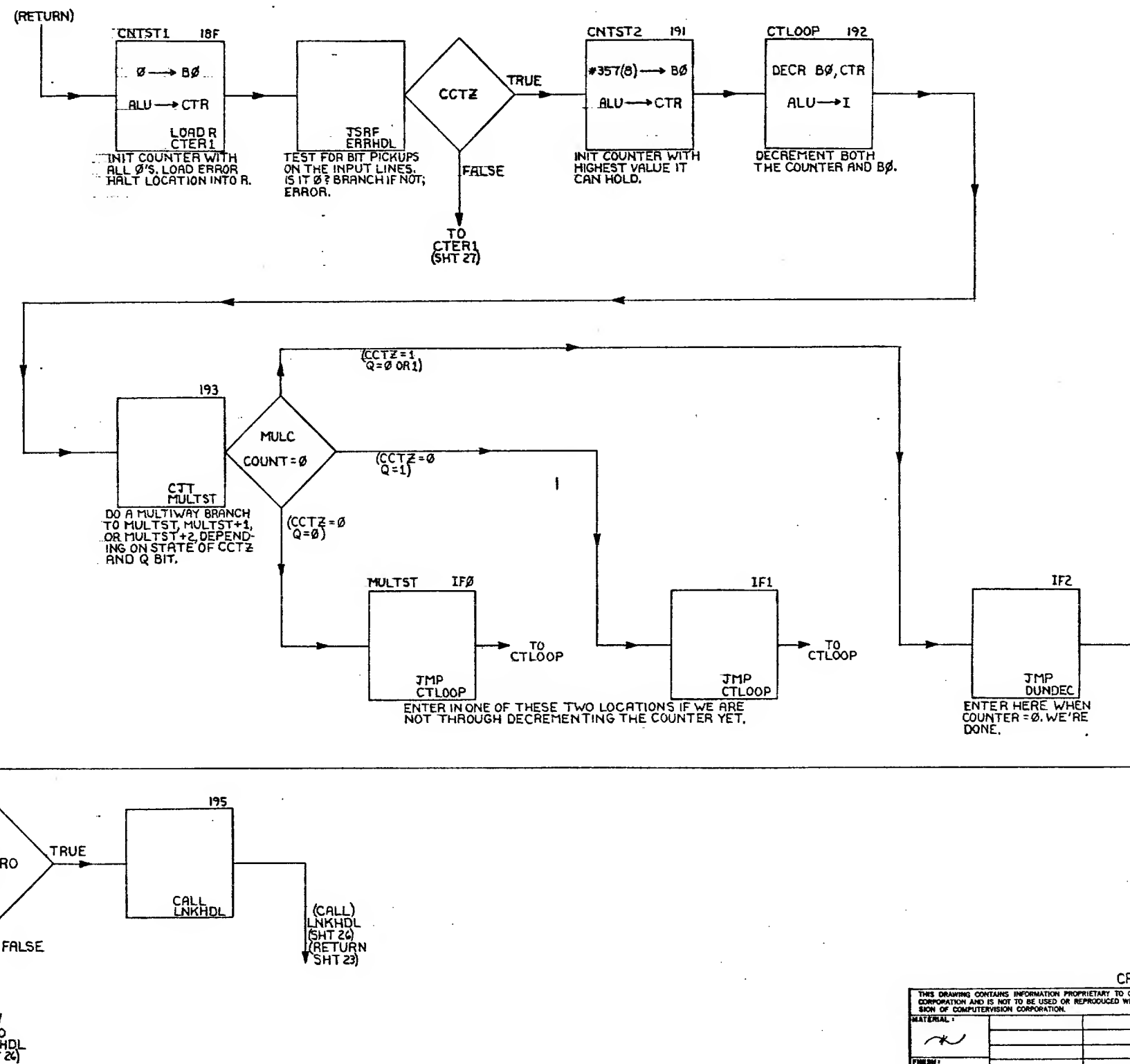
4

3

2

1

THIS SUBTEST INSURES THE INTEGRITY
OF THE CPU COUNTER.



DS21E015

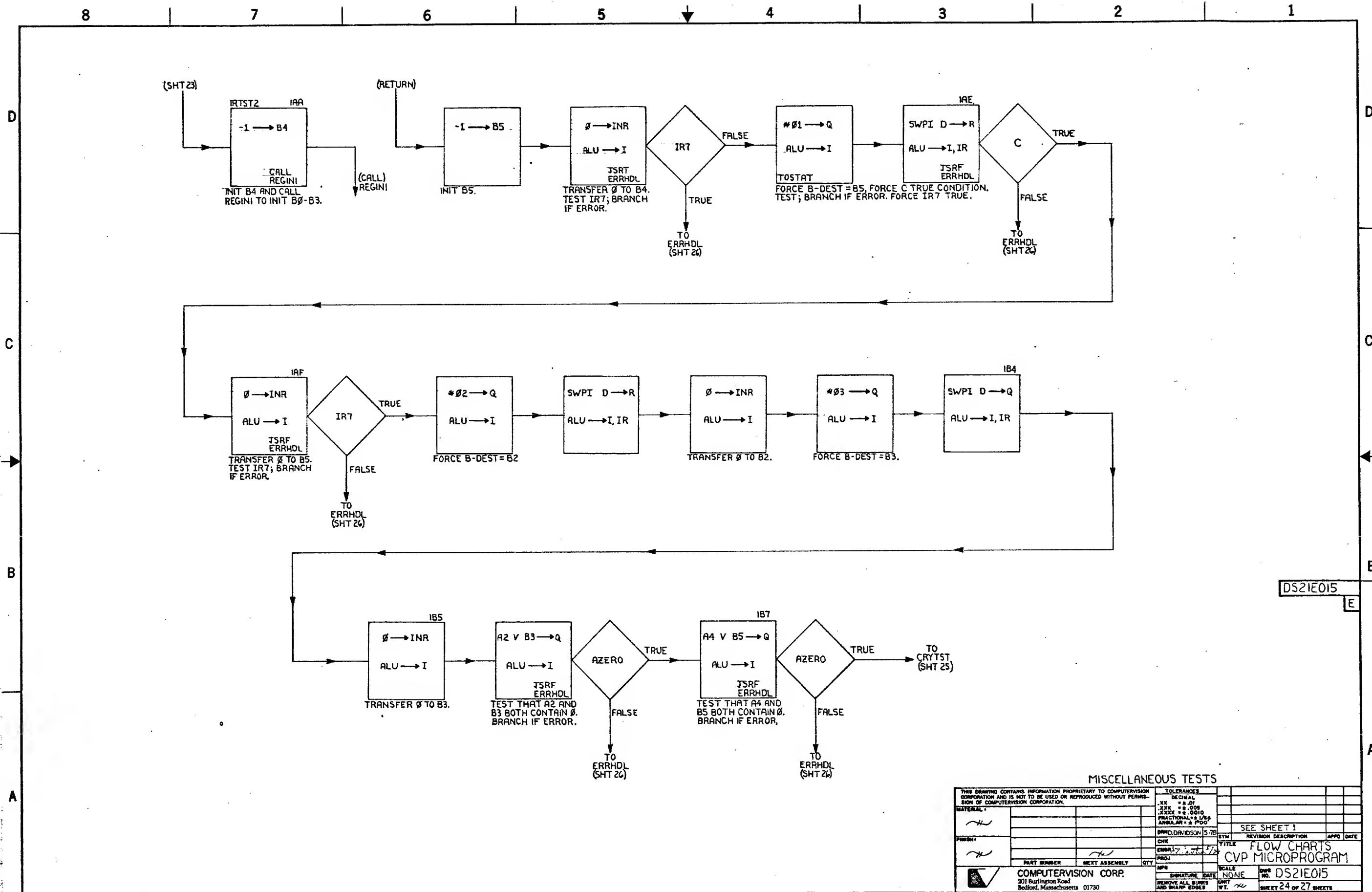
CPU COUNTER SUBTEST

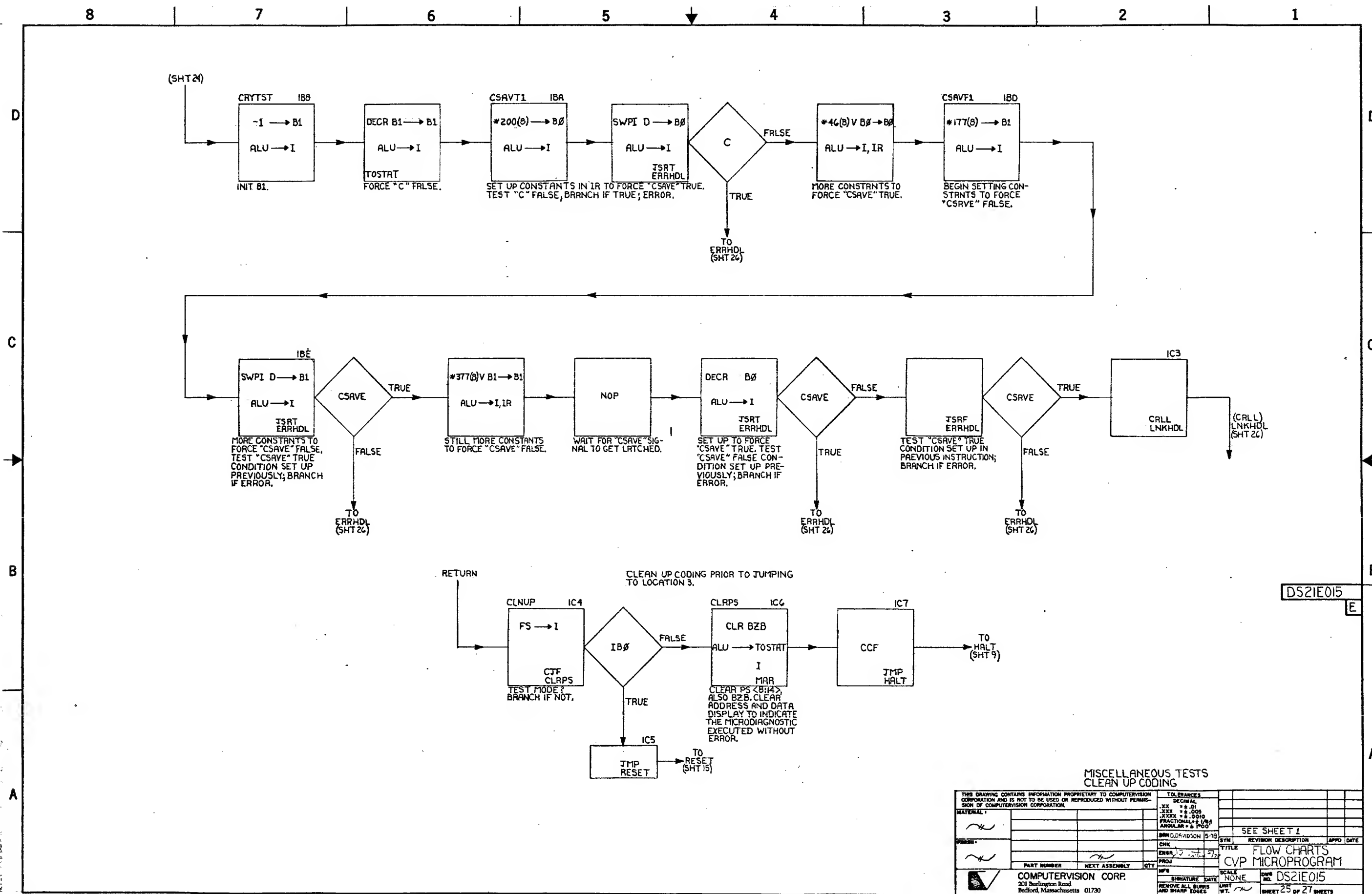
THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.				TOLERANCES DECIMAL .XX ± .01 .XXX ± .005 .XXXX ± .0010 FRACTIONAL ± 1/64 ANGULAR ± .100°							
MATERIAL				DATE				REV			
FINISH				CHK				TITLE			
PART NUMBER				NEXT ASSEMBLY				SCALE			
COMPUTERVISION CORP. 201 Burlington Road Bedford, Massachusetts 01730				SIGNATURE				DATE			
REMOVE ALL BURRS AND SHARP EDGES				UNIT				SHEET 22 OF 27 SHEETS			

SEE SHEET 1

FLOW CHARTS
CVP MICROPROGRAM

DWG NO. DS21E015





DS21E015
E

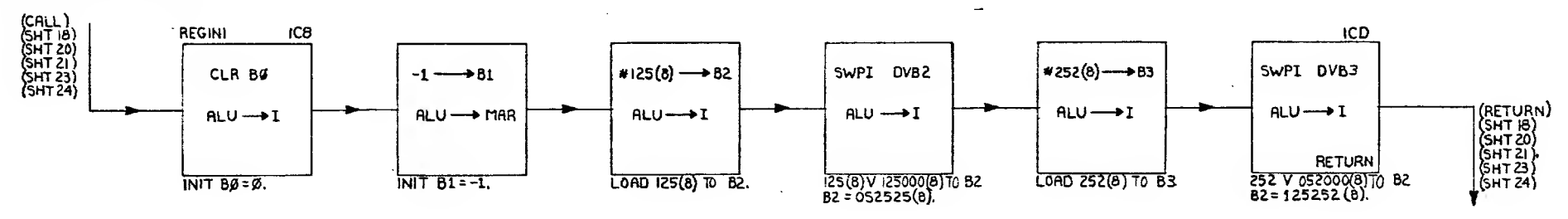
MISCELLANEOUS TESTS
CLEAN UP CODING

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.				TOLERANCES DECIMAL .XX ± .01 .XXX ± .005 .XXXX ± .0010 FRACTIONAL ± 1/64 ANGULAR ± .000"			
MATERIAL				SYN			
PREP				REV			
CHK				DATE			
ENGR				TITLE			
PROJ				SCALE			
PART NUMBER				DWG NO.			
NEXT ASSEMBLY				SHEET			
QTY				OF			
COMPUTERVISION CORP.				SIGNATURE			
201 Burlington Road				DATE			
Bedford, Massachusetts 01730				UNIT			
REMOVE ALL BURS AND SHARP EDGES				SHEET 25 OF 27 SHEETS			

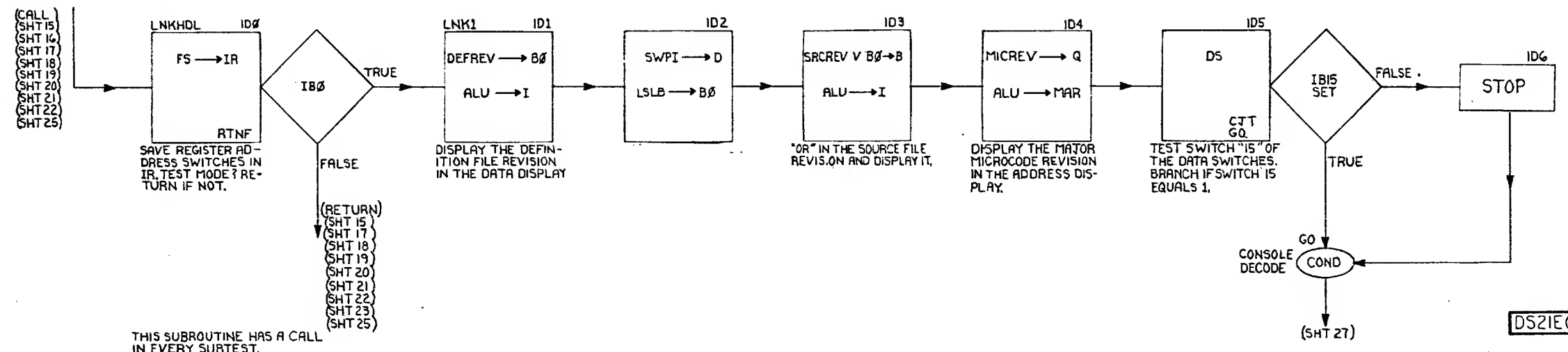
8 7 6 5 4 3 2 1

DIAGNOSTIC SUBROUTINES

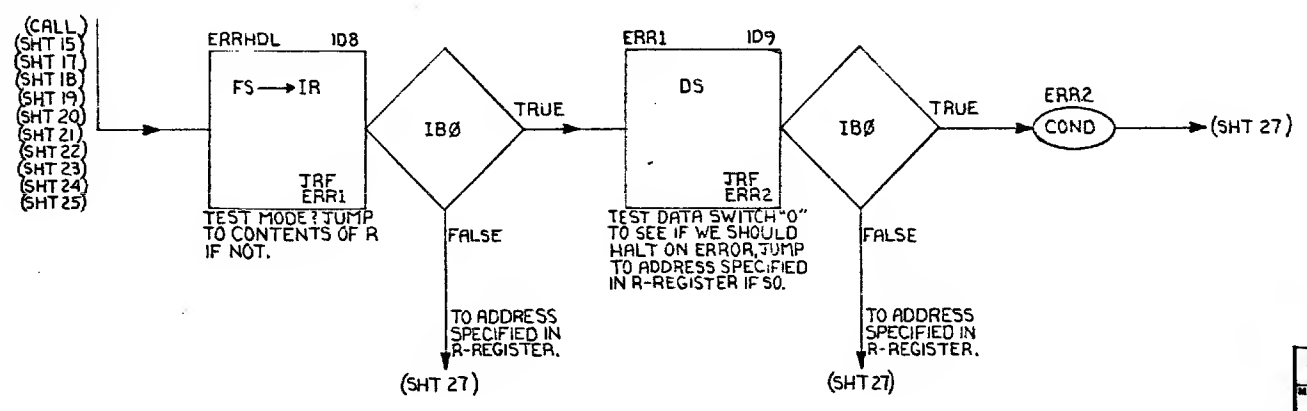
SUBROUTINE TO INITIALIZE
ALU REGISTERS B0 THRU B3.



THIS SUBROUTINE HAS A CALL AT
THE END OF EVERY SUBTEST.



THIS SUBROUTINE HAS A CALL
IN EVERY SUBTEST.



DIAGNOSTIC SUBROUTINE

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.		TOLERANCES DECIMAL .XX ± .01 .XXX ± .005 .XXXX ± .0010 FRACTIONAL ± 1/64 ANGULAR ± 1°00'			
MATERIAL		DATE	5/78	REV	1
FIGURE		CHK		FILE	SEE SHEET 1
ENGR		PROJ		TITLE	FLOW CHARTS CVP MICROPROGRAM
PART NUMBER		NEXT ASSEMBLY		SCALE	NONE
QTY		DATE		DWG NO.	DS21E015
COMPUTERVISION CORP. 201 Burlington Road Bedford, Massachusetts 01730		SIGNATURE		DATE	
		REMOVE ALL BURRS AND SHARP EDGES		UNIT	W.C.
				SHEET	26 OF 27 SHEETS

8

7

6

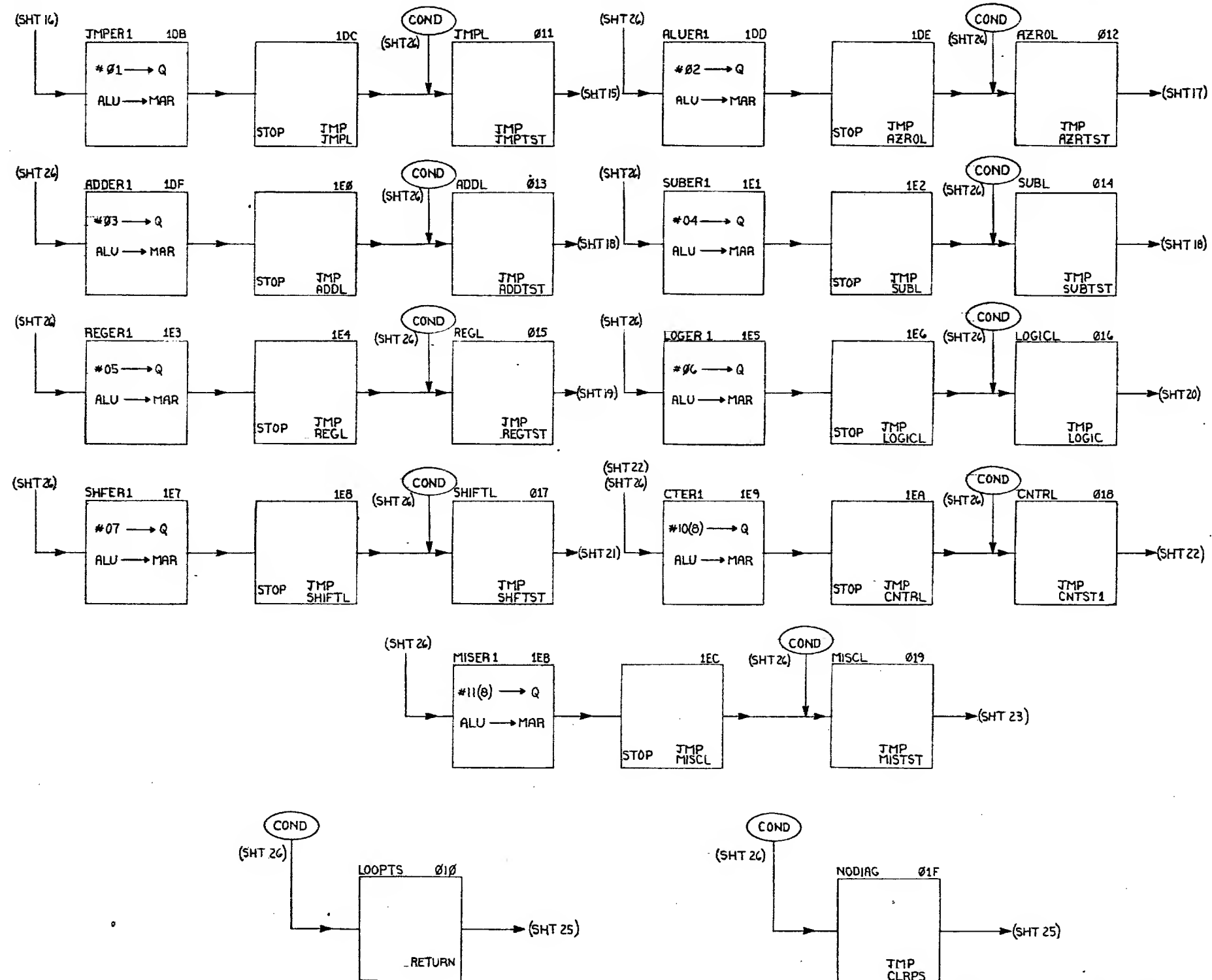
5

4

3

2

1



DS21E015

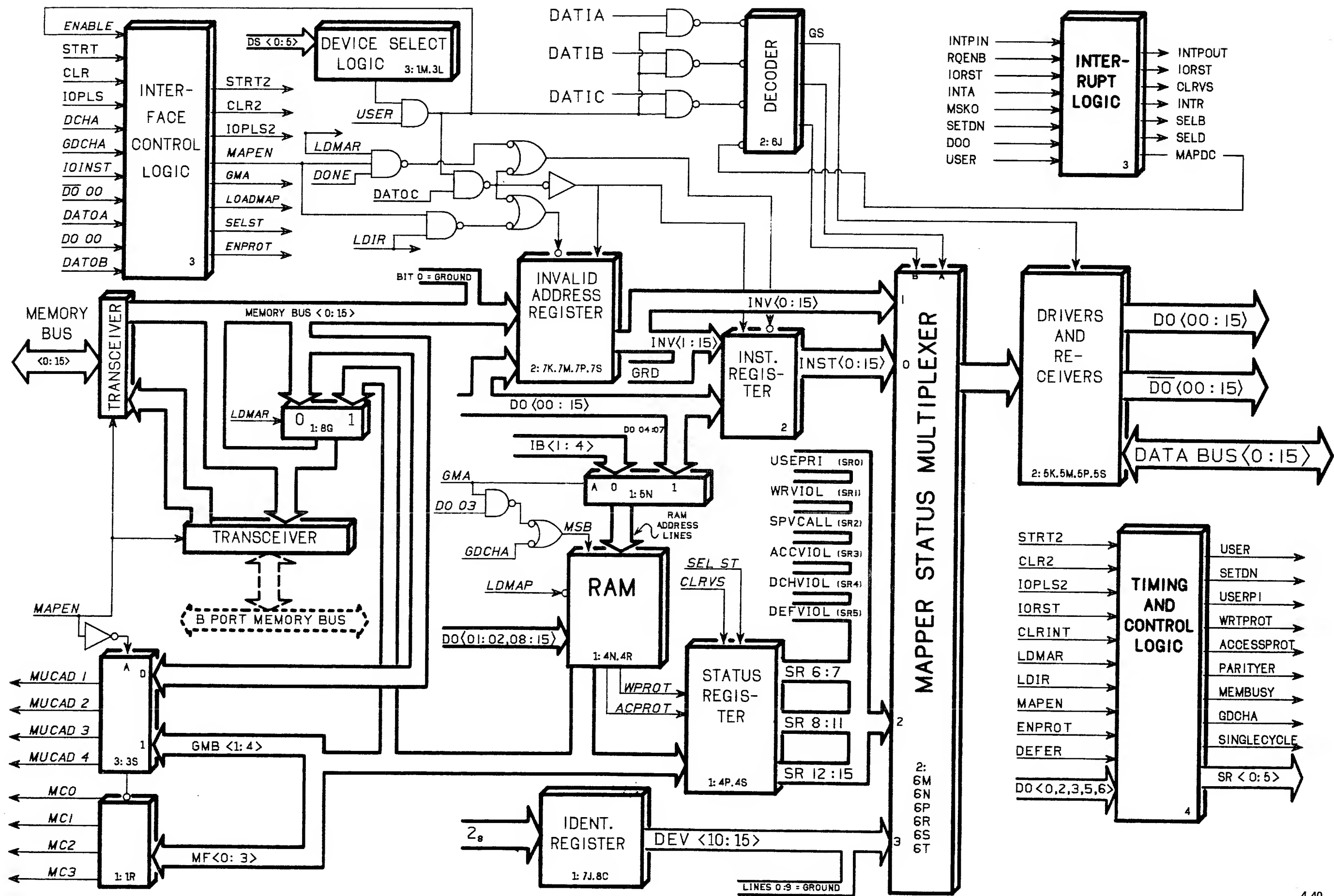
E

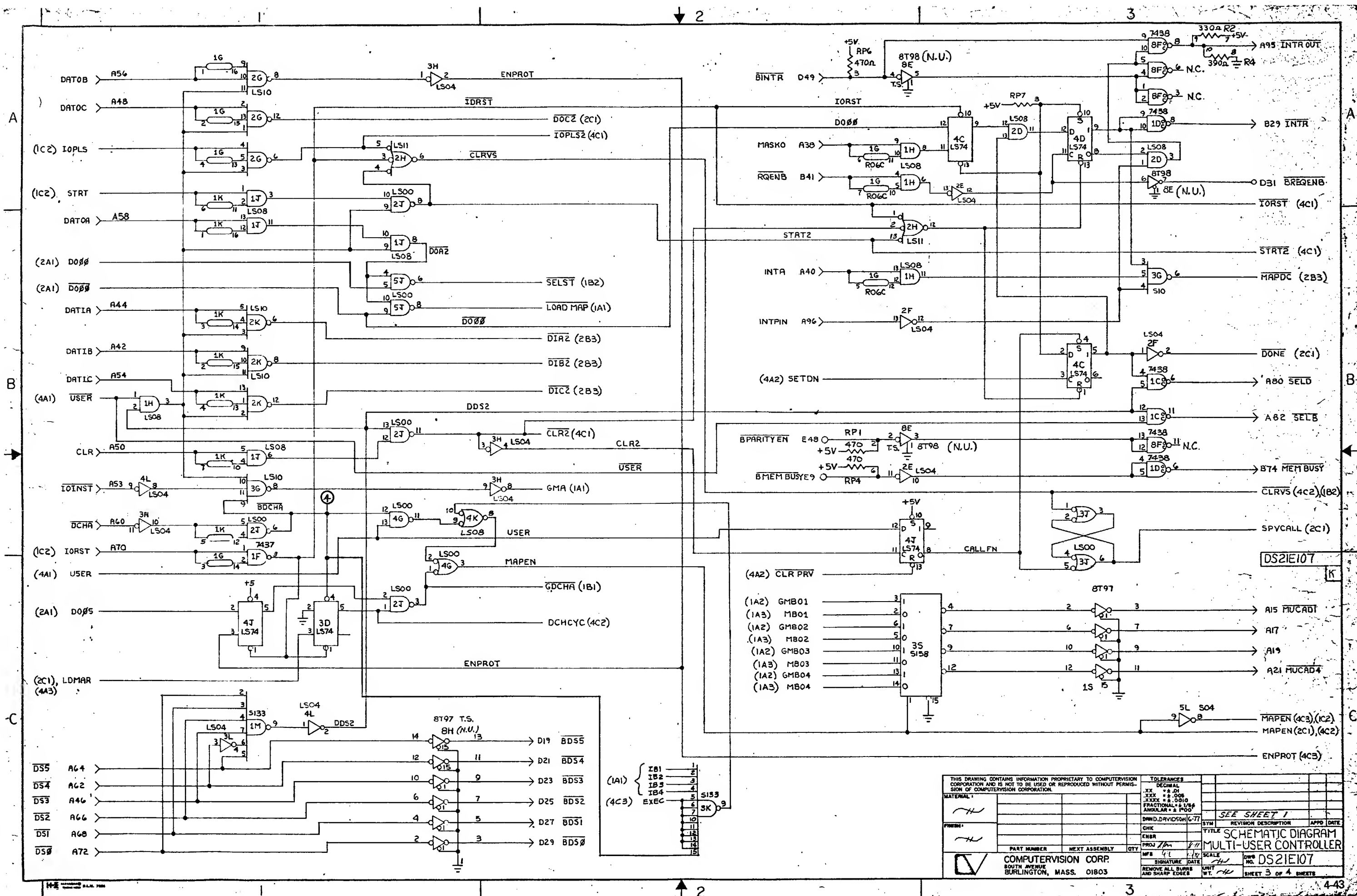
ERROR HALTS AND COND LINKS

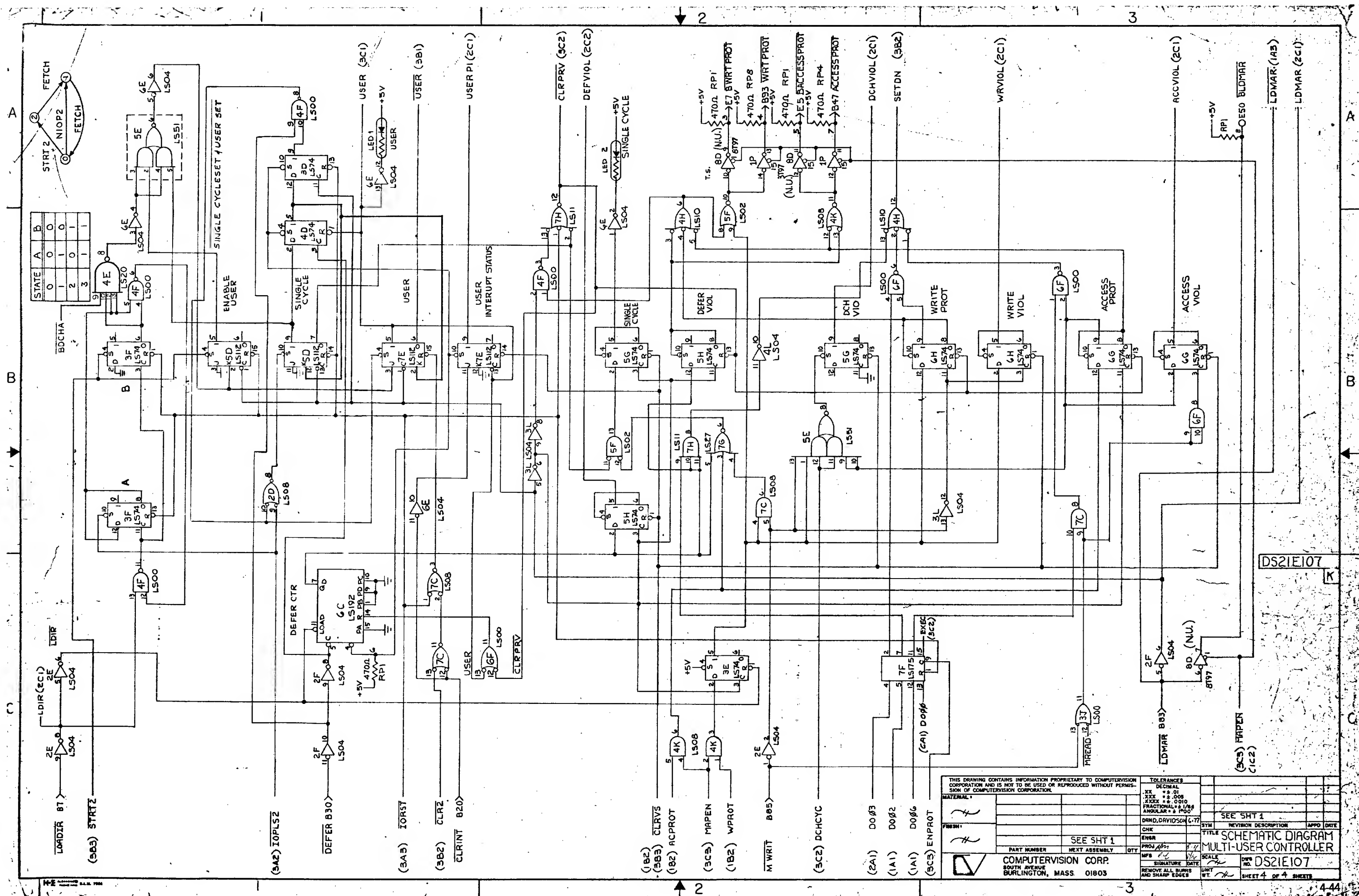
THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.		TOLERANCES	
MATERIAL		DECIMAL	
FINISH		.XX ± .01	
		.XXX ± .005	
		.XXXX ± .0010	
		FRACTIONAL ± 1/64	
		ANGULAR ± 1° 00'	
PART NUMBER		CHK	578
NEXT ASSEMBLY		ENGR	7
QTY		PROJ	
COMPUTERVISION CORP.		SCALE	
201 Burlington Road		SIGNATURE	
Bedford, Massachusetts 01730		DATE	
		UNIT	
		WT.	
		SEE SHEET 1	
		TITLE	
		FLOW CHARTS	
		CVP MICROPROGRAM	
		NO. DS21E015	
		SHEET 27 OF 27 SHEETS	

Memory Management and Protection Unit

Block Diagram	4-40
Mapper RAM	4-41
Bus Logic	4-41
Mapper Status	4-42
I/O Logic	4-43
Timing Logic	4-44
Protection Logic	4-44







THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.

TOLERANCES

UNIT	DECIMAL	FRACTIONAL	ANGULAR
XX	±0.01		
XXX	±0.005		
XXXX	±0.002		
FRACTIONAL	±1/16		
ANGULAR	±1°00'		

REVISION DESCRIPTION

REV	DESCRIPTION	DATE
1	SEE SHT 1	

SEE SHT 1

COMPUTERVISION CORP.
SOUTH AVENUE
BURLINGTON, MASS. 01803

DS21E107

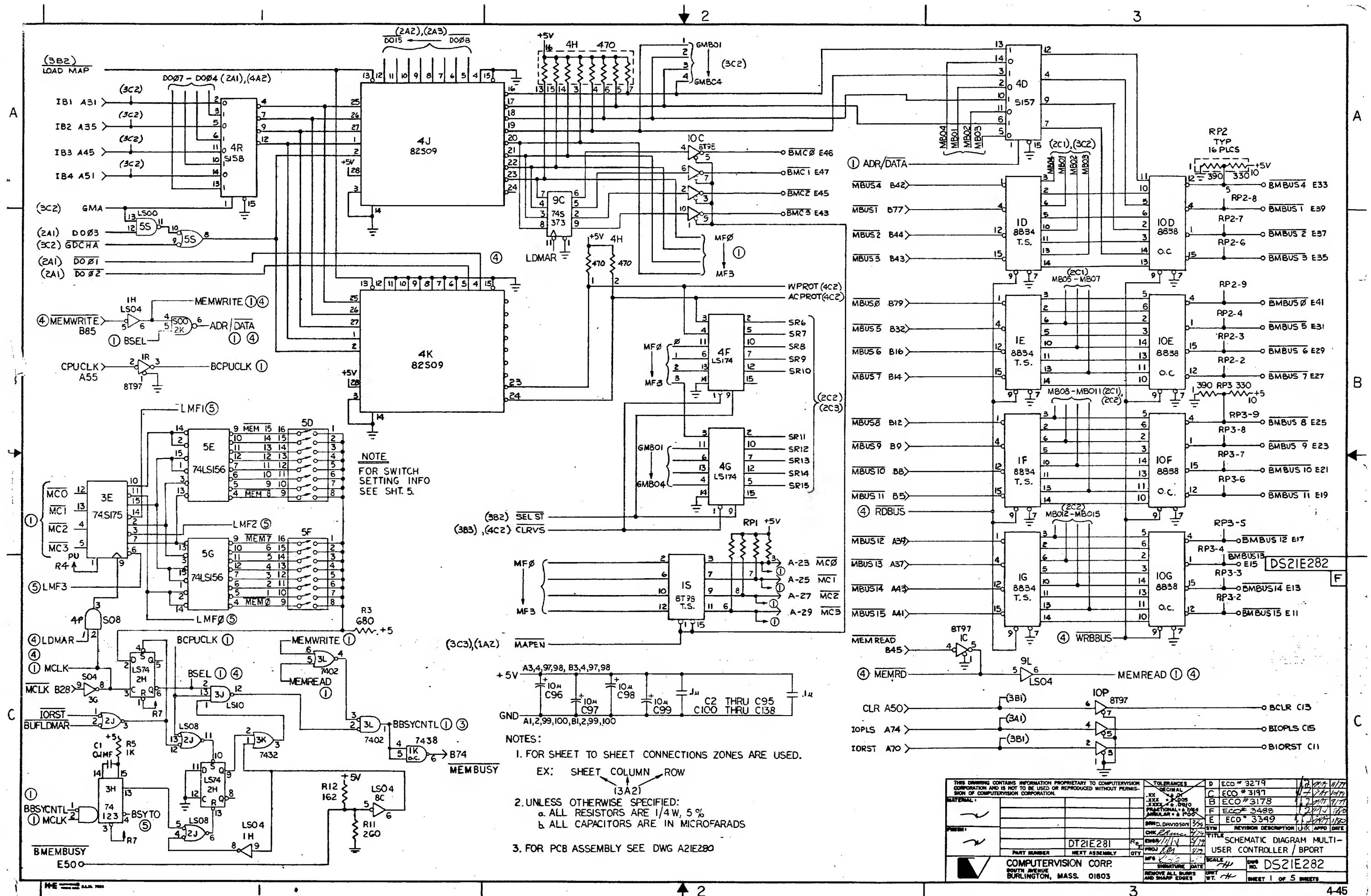
SCHEMATIC DIAGRAM
MULTI-USER CONTROLLER

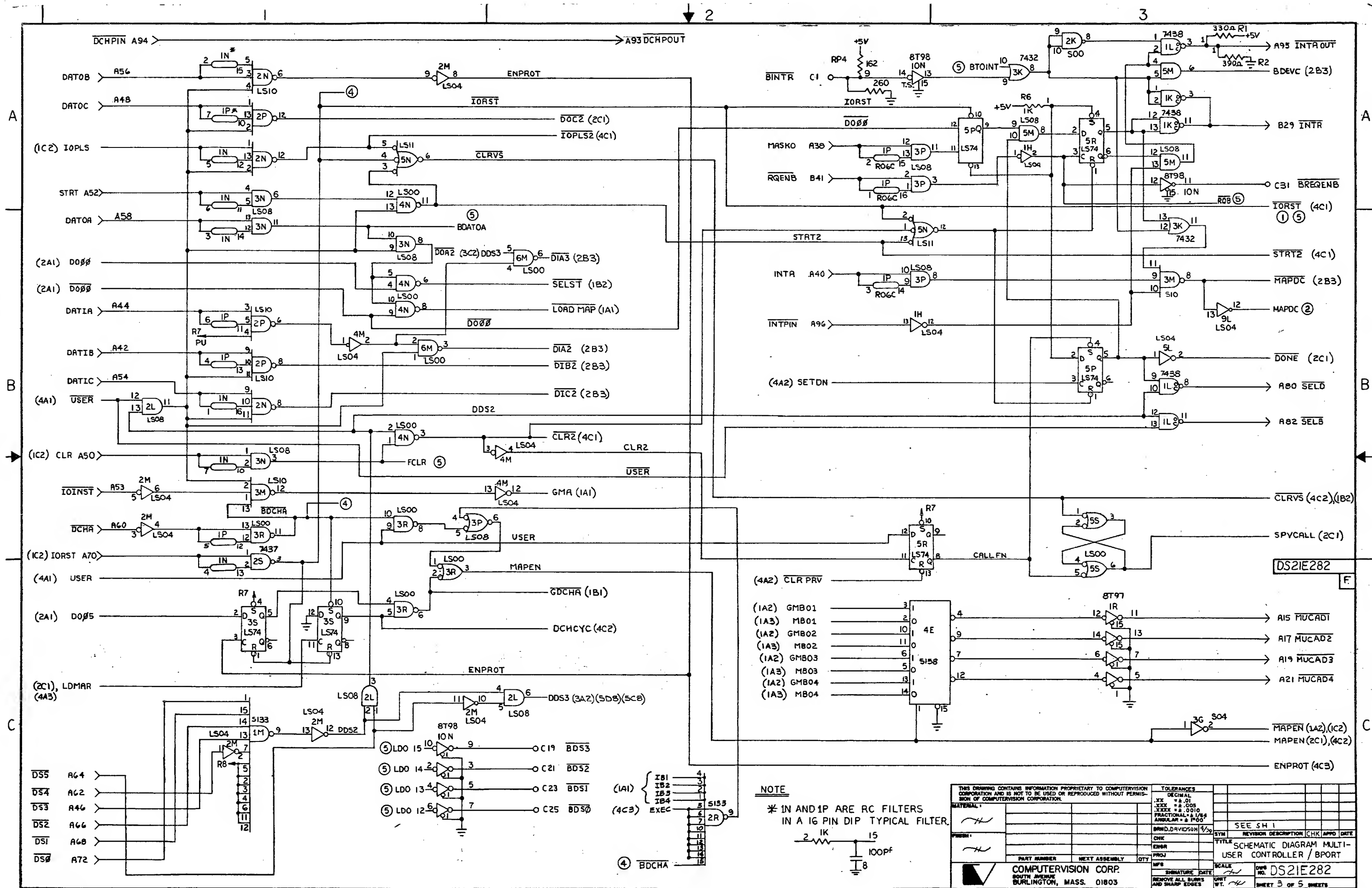
DS21E107

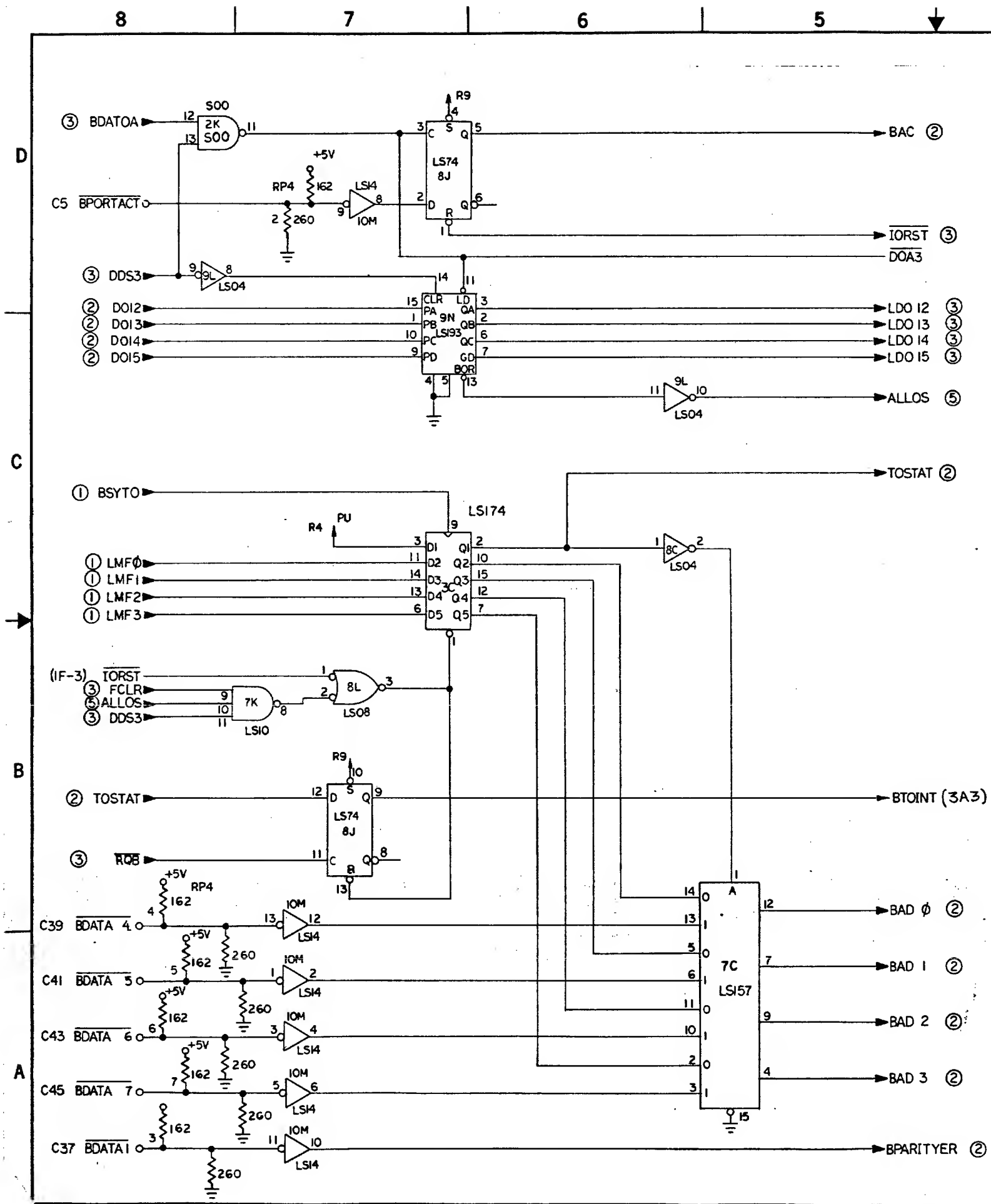
SHEET 4 OF 4 SHEETS

B-Port Memory Managment and Protection Unit

Mapper Ram	4-45
Bus Logic	4-45
Mapper Status Logic	4-46
I/O Logic	4-47
Timing Logic	4-48
Protection Logic	4-48
Switch Settings	4-49
Jumper Configuration	4-49
B-Port Connector Pinouts	4-49







SWITCH PACKS 5D & 5F

THE PROPER SWITCHES IN SWITCH PACKS 5D & 5F MUST BE CLOSED WHEN THE MUC IS DRIVING BPORT MEMORIES. ONE SWITCH MUST BE CLOSED FOR EVERY 32K BPORT FIELD SEGMENT ADDRESS THAT IS BEING USED IN A CONFIGURED SYSTEM.

BPORT FIELD ADDR*	CLOSED SWITCH POSITION	
	5D	5F
0		8
1		7
2		6
3		5
4		4
5		3
6		2
7		1
8	8	
9	7	
10	6	
11	5	
12	4	
13	3	
14	2	
15	1	

* THE BPORT FIELD ADDR REPRESENTS ONE 32K SEGMENT OF MEMORY.

REF SHT.2, JP1 MUST BE INSERTED WHEN THE MUC IS DRIVING BPORT MEMORIES.

B PORT CONNECTOR PINOUTS

CONN C

1	BINTR	2	
3		4	
5	BPORTACT	6	
7		8	
9		10	
11	BIORST	12	
13	BCLR	14	
15	BIOPLS	16	
17		18	
19	BDS3	20	
21	BDS2	22	
23	BDS1	24	
25	BDS0	26	
27		28	
29		30	
31	BRQENB	32	
33		34	
35		36	
37	BDATA1	38	
39	BDATA4	40	
41	BDATA5	42	
43	BDATA6	44	
45	BDATA7	46	
47		48	
49		50	

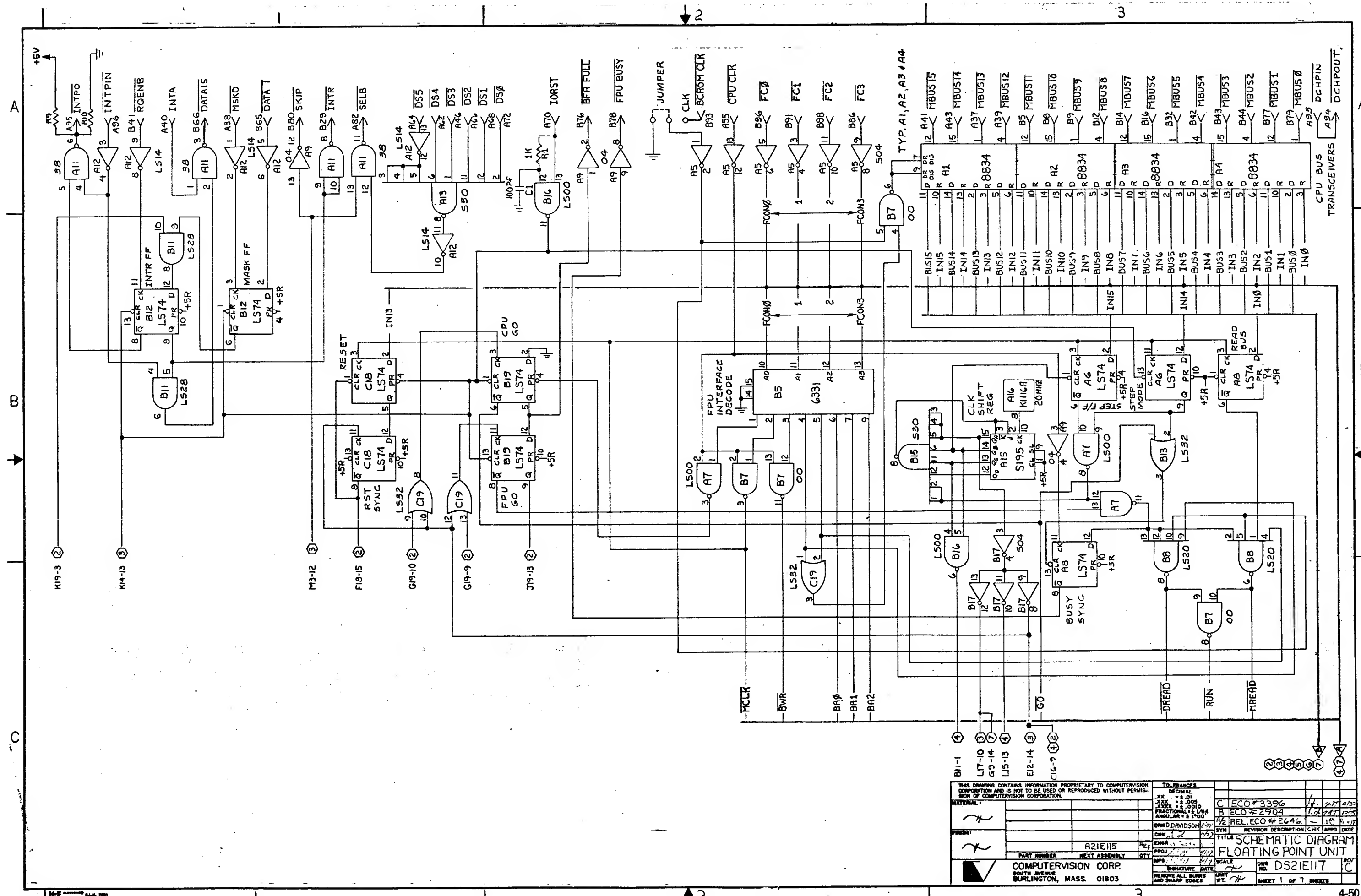
CONN E

1	BMEMRD	2	
3	BMEMRD	4	
5	BMEMWRT	6	
7	BMEMWRT	8	
9	BLDMAR	10	
11	BMEMBUS15	12	
13		14	
15		16	
17		18	
19		20	
21		22	
23		24	
25		26	
27		28	
29		30	
31		32	
33		34	
35		36	
37	2	38	FREE
39	1	40	FREE
41	BMEMBUS0	42	
43	BMC3	44	FREE
45	BMC2	46	BMC0
47	BMCT	48	
49		50	BMEMBSY

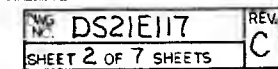
ALL UNUSED PINS GROUNDED

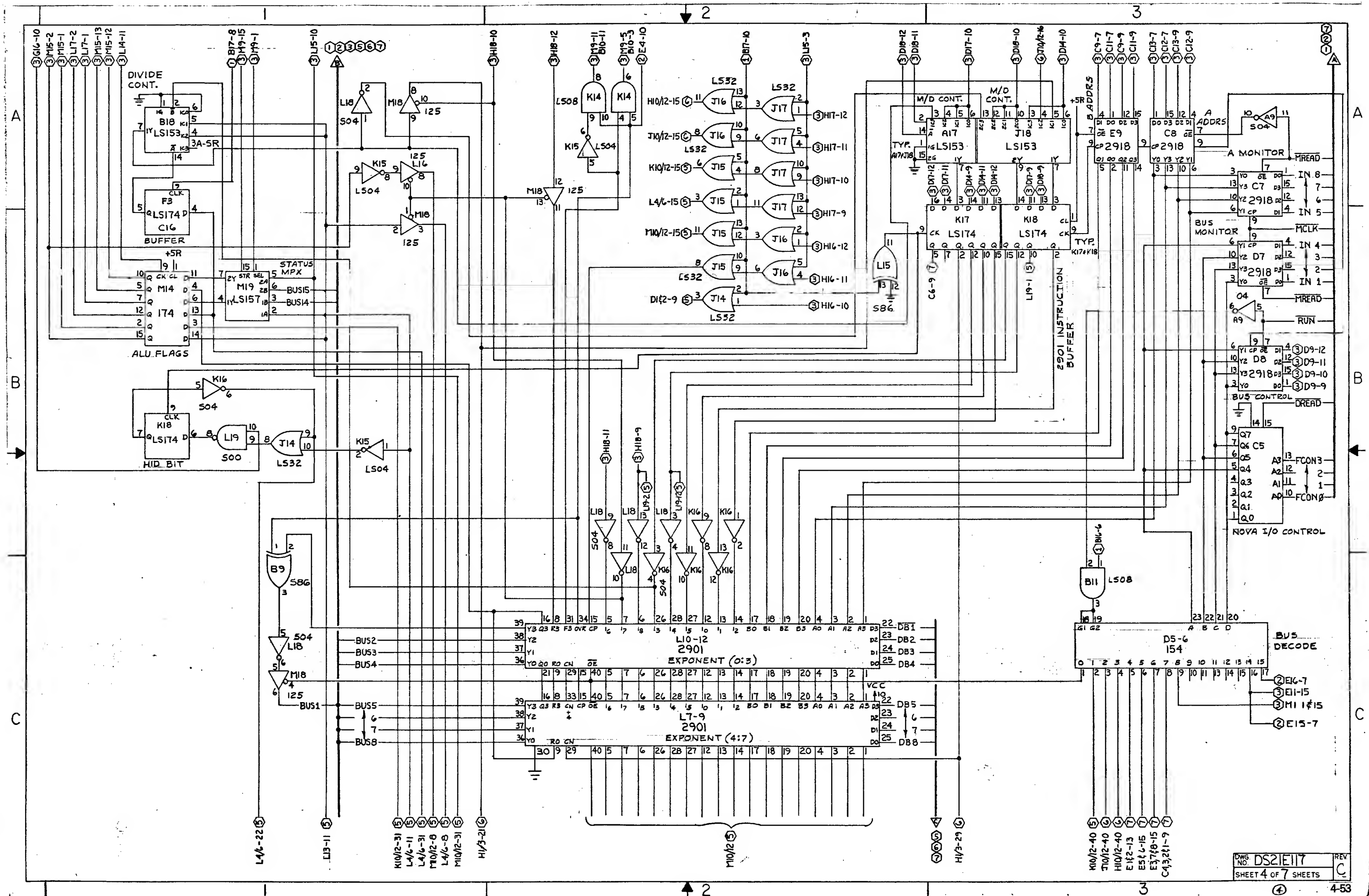
THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.				TOLERANCES DECIMAL .XX = .01 .XXX = .005 FRACTIONAL = 1/16 ANGULAR = .0001				SEE SH 1			
MATERIAL:				DIM (F) Range 1/16				SYM REVISION DESCRIPTION (CHK) APPD DATE			
PERSON:				CHK				TITLE SCHEMATIC DIAGRAM MULTI-USER CONTROLLER / BPORT			
PART NUMBER				NEXT ASSEMBLY				QTY			
COMPUTERVISION CORP. 201 Burlington Road Bedford, Massachusetts 01730				SIGNATURE DATE				SCALE 1/4" = 1"			
REMOVE ALL SHARP AND SWAMP EDGES				UNIT WT.				SHEET 5 OF 5 SHEETS			

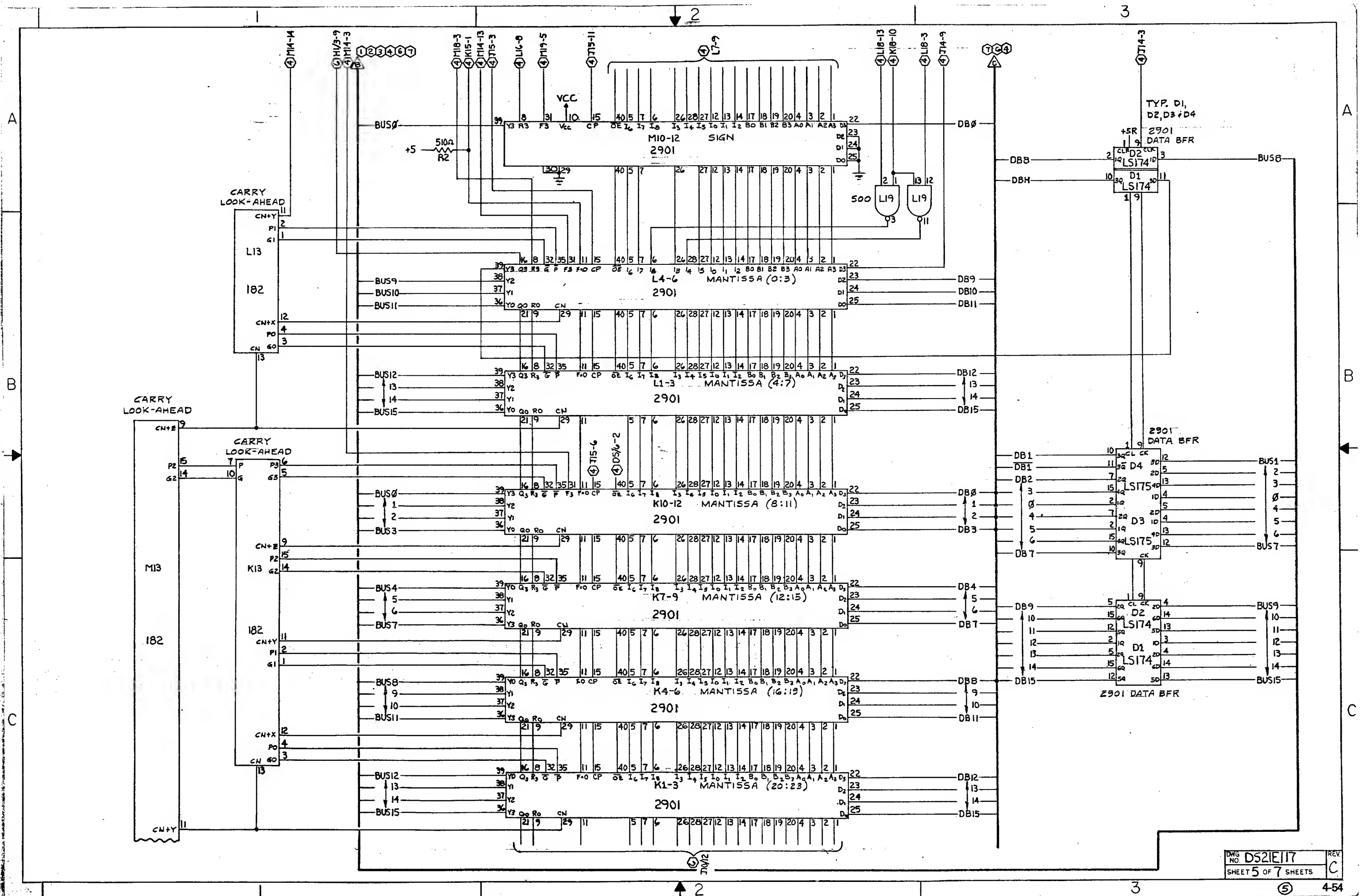
Floating Point Unit

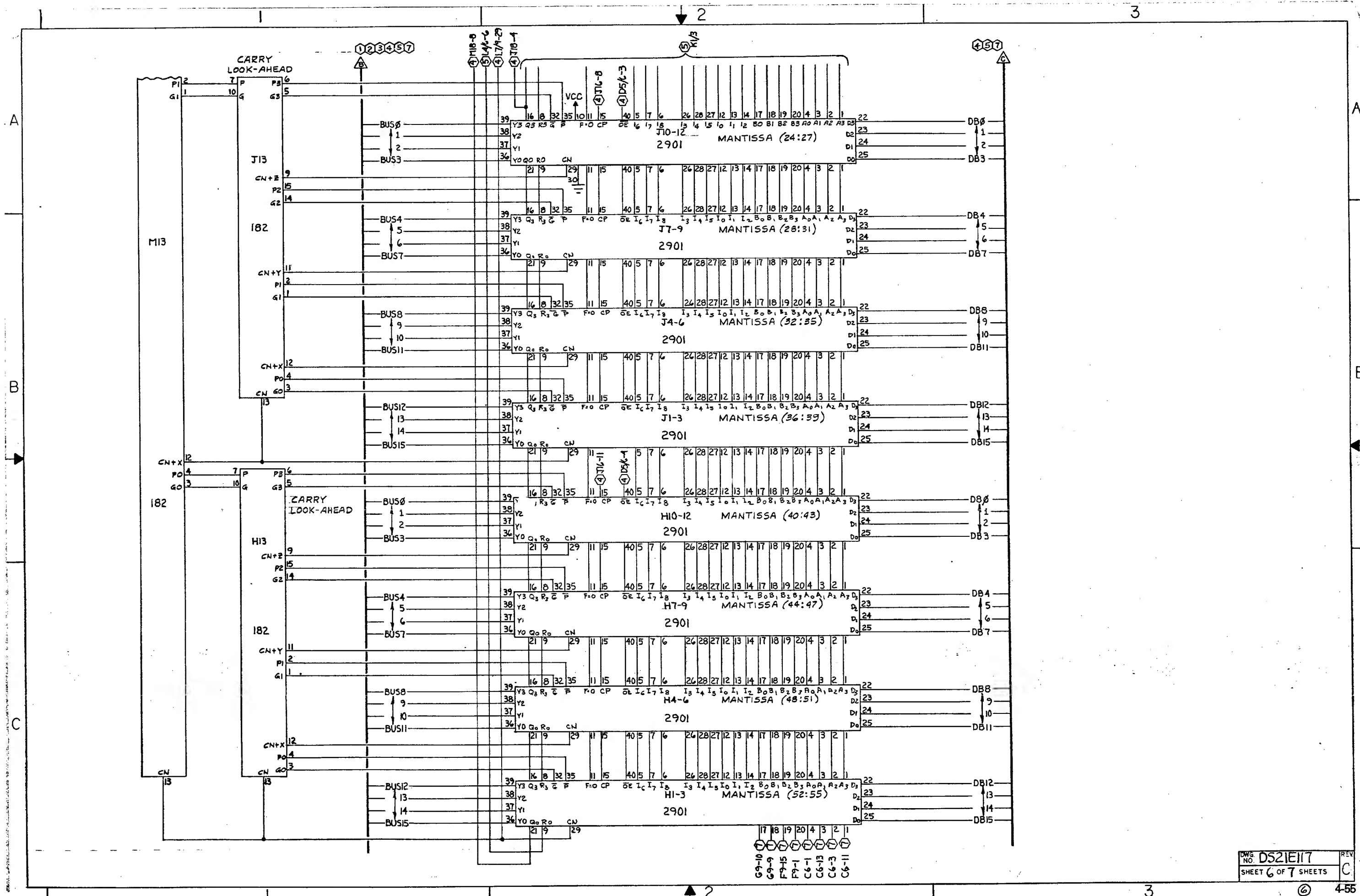


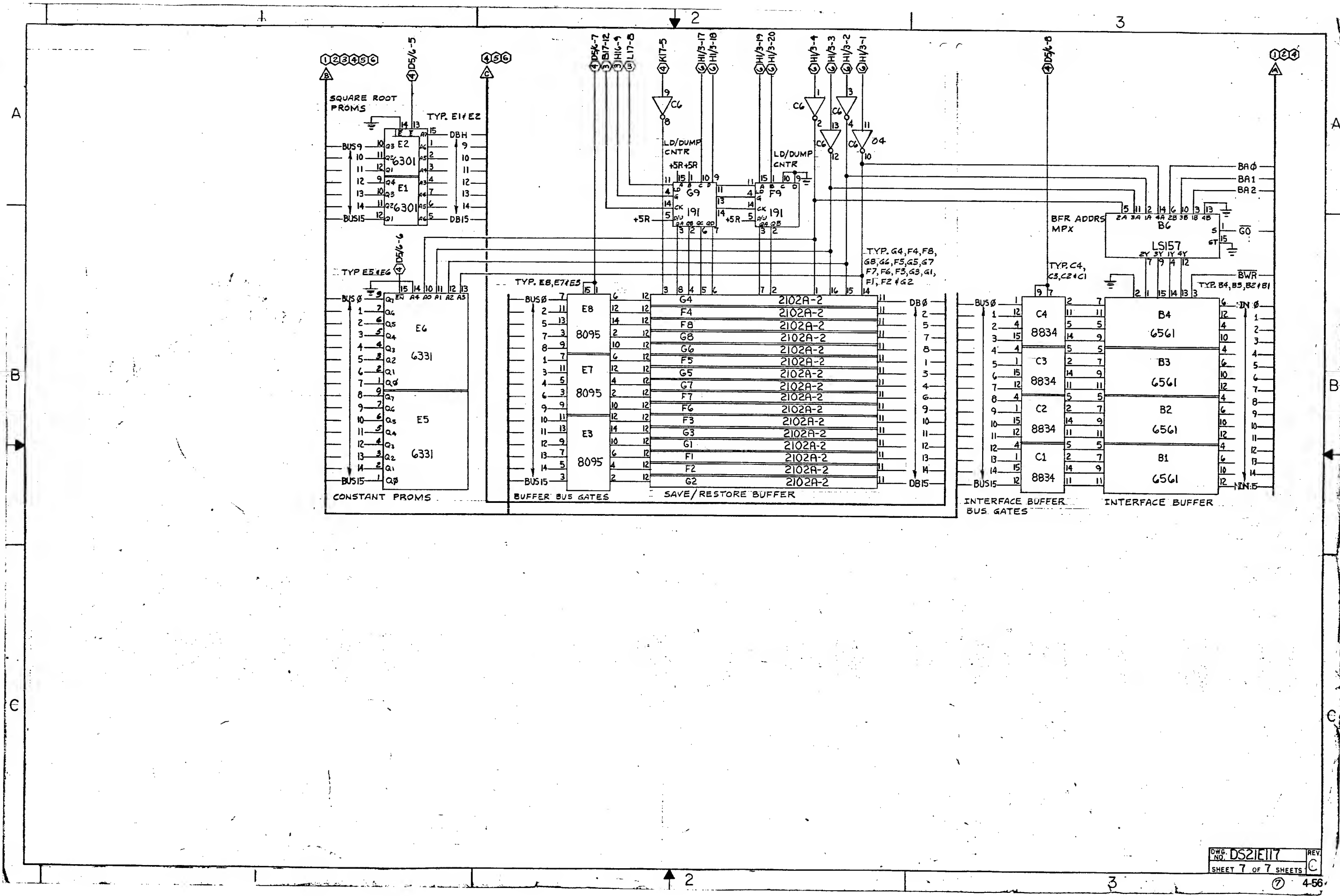
THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.		TOLERANCES DECIMAL XX = ±.01 XXX = ±.005 XXX = ±.001 FRACTIONAL = 1/64 ANGULAR = ± 1°00'		C ECO#33396 B ECO#2904 A2 REL ECO#2646	
MATERIAL:		CHK: 1/2		SYM: 1/2	
FRESH:		ENGR: 1/2		REV: 1/2	
PART NUMBER		NEXT ASSEMBLY		QTY	
COMPUTERVISION CORP. SOUTH AVENUE BURLINGTON, MASS. 01803		SIGNATURE		DATE	
REMOVE ALL BURRS AND SHARP EDGES		SCALE		DWG. NO.	
		SHEET 1 OF 7 SHEETS		REV. C	











128/32K A/B-Port Memory Unit

Address Selection	4-57
Jumper Configuration	4-57
Memory Prioritizing	4-58
Refresh and Timing Logic	4-58
Data in Multiplexer	4-59
Data Out Latch	4-59
Parity Logic	4-59
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Bus Logic	4-61
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A-Port/B-Port Select Logic	4-62
Address Multiplexer Logic	4-62
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I/O Logic	4-63
Memory Row A	4-64
Memory Row B	4-65
Memory Row C	4-66
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Memory Row E	4-68
Memory Row F	4-69
Memory Row G	4-70
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B-Port Connectors	4-72

	SINGLE PORT	DUAL PORT, DISTRIBUTED MODE	DUAL PORT, GPU MODE	SINGLE PORT 32K
PDPULATED WITH 4K RAMS (MK 4027-3)	USE CONFIGURATION BLOCKS A.A.B	USE CONFIGURATION BLOCKS A.A.C.D.E	USE CNFIGURATION BLOCKS A.C.O.E	
POPULATED WITH 18K RAMS (MK 4118-3)	DA21E260-02 USE CONFIGURATION BLOCKS B.F	0A21E260-01 USE CONFIGURATION BLOCKS D.E.F.G	DA21E260-01 USE CONFIGURATION BLOCKS E.F.H	DA21E260-03 USE CONFIGURATION BLOCKS A.I

- 1) REMOVE R22
- 2) ADJUST POT R31 SUCH THAT TP HAS A 20 μ S REP RATE
- 3) INSERT JUMPERS: JP8-2 , JP11-2 , JP13-2
- 4) POPULATE MEMORY ARRAY WITH MK4027-3 MEMORY CHIPS

*APORT FIELD	AMCO	AMC1	AMC2	AMC3	**CLOSED CONTACTS ON SWITCH PACK IV
0	H	H	H	H	8
1	H	H	H	L	7,8
2	H	H	L	H	8,8
3	H	H	L	L	8,7,8
4	H	L	H	H	8,8
5	H	L	H	L	5,7,8
6	H	L	L	H	5,6,8
7	H	L	L	L	5,8,7,8
8	L	H	H	H	4,8
9	L	H	H	L	4,7,8
10	L	H	L	H	4,6,8
11	L	H	L	L	4,8,7,8
12	L	L	H	H	4,5,8
13	L	L	H	L	4,6,7,8
14	L	L	L	H	4,5,8,8
15	L	L	L	L	4,5,8,7,8

1) DEPOPULATE PC BOARD AS PER BM21E250-02
2) ADD JUMPERS JP2 , JP5 , JP7

1) INSERT JUMPERS: J10-2 . J12-2 . J14-2

*BPORT FIELD OR I/D DEVICE CODE	BWC0 OR BDS0	BWC1 OR BDS1	BWC2 OR BDS2	BWC3 OR BDS3	**CLOSED CONTACTS ON SWITCH PACK 128
0	H	H	H	H	8
1	H	H	H	L	4.8
2	H	H	L	H	3.8
3	H	H	L	L	3.4.8
4	H	L	H	H	2.8
5	H	L	H	L	2.4.8
6	H	L	L	H	2.3.8
7	H	L	L	L	2.3.4.8
8	L	H	H	H	1.8
9	L	H	H	L	1.4.8
10	L	H	L	H	1.3.8
11	L	H	L	L	1.3.4.8
12	L	L	H	H	1.2.8
13	L	L	H	L	1.2.4.8
14	L	L	L	H	1.2.3.8
15	L	L	L	L	1.2.3.4.8

THE LAST DUAL PORT MEMORY BOARD IN A DAISY CHAIN MUST TERMINATE BPORT BUS SIGNALS. THE LAST DUAL PORT MEMORY IN A DAISY CHAIN ONLY MUST HAVE THE FOLLOWING RESISTORS: RP8,RP7,RP8, RP12 , RES PACK 12F

- 1) R20 AND R22 INSERTED
- 2) INSERT JIMPER JP4
- 3) ADJUST POT R31 SUCH THAT TP HAS A 14.6 μ S REP RATE
- 4) INSERT JUMPERS JP9, JP11, JP13
- 5) POPULATE MEMORY ARRAY WITH MK4118-3 MEMORY CHIPS
- 6) APORT 128K ADDRESSING CHART

*APDRT FIELD NO.	AMCD	AMC1	AMC2	AMC3	AMC3	**CLOSED CONTACTS ON SWITCH PACK 1V
0.1.2.3	H	H	H	H	H	
4.5.6.7	H	H	H	H	L	5
8.9.10.11	H	H	H	L	H	4
12.13.14.15	H	H	H	L	L	4.5
16.17.18.19	H	H	L	H	H	3
20.21.22.23	H	H	L	H	L	3.5
24.25.26.27	H	H	L	L	H	3.4
28.29.30.31	H	H	L	L	L	3.4.5
32.33.34.35	H	L	H	H	H	2
36.37.38.39	H	L	H	H	L	2.5
40.41.42.43	H	L	H	L	H	2.4
44.45.46.47	H	L	H	L	L	2.4.5
48.49.50.51	H	L	L	H	H	2.3
52.53.54.55	H	L	L	H	L	2.3.5
56.57.58.59	H	L	L	L	H	2.3.4
60.61.62.63	H	L	L	L	L	2.3.4.5
64.65.66.67	L	H	H	H	H	1
68.69.70.71	L	H	H	H	L	1.5
72.73.74.75	L	H	H	L	H	1.4
76.77.78.79	L	H	H	L	L	1.4.5
80.81.82.83	L	H	L	H	H	1.2
84.85.86.87	L	H	L	H	L	1.3.5
88.89.90.91	L	H	L	L	H	1.3.4
92.93.94.95	L	H	L	L	L	1.3.4.5
96.97.98.99	L	L	H	H	H	1.2
100.101.102.103	L	L	H	H	L	1.2.5
104.105.106.107	L	L	H	L	H	1.2.4
108.109.110.111	L	L	H	L	L	1.2.4.5
112.113.114.115	L	L	L	H	H	1.2.3
116.117.118.119	L	L	L	H	L	1.2.3.5
120.121.122.123	L	L	L	L	H	1.2.3.4
124.125.126.127	L	L	L	L	L	1.2.3.4.5

**** ALL OTHER SWITCH CONTACTS ON SWITCH IV ARE OPEN**

WITH JUMPERS JP10, JP12, JP14, INSERTED

BMC2	BMC3	COMMON SEGMENT OF A PORT 128K MEMORY
H	H	1ST 32K
H	L	2ND 32K
L	H	3RD 32K
L	L	4TH 32K

2) TO FORCE COMMON APOR/BPORT MEMORY
INDEPENDENT OF BMC2 AND BMC3

BMC2	BMC3	COMMON SEGMENT OF A PORT 128K MEMORY	JUMPERS INSERTED
X	X	1ST 32K	JP10, JP15, JP16
X	X	2ND 32K	JP10, JP16
X	X	3RD 32K	JP10, JP15
X	X	4TH 32K	JP10

WHERE X - DDNT CARE

1) INSERT JUMPERS JP10, JP12, JP14
2) BPDRT 128K ADDRESSING CHART

BPORT FIELD NO.	BMA00	BMA01	BMA02	BMCO	BMC1	**CLOSED CONTACTS ON SWITCH PACKS	
						9C	12S
0.1.2.3	H	H	H	H	H		8
4.5.6.7	H	H	H	H	L		2.8
8.9.10.11	H	H	H	L	H		1.8
12.13.14.15	H	H	H	L	L		1.2.8
16.17.18.19	H	H	L	H	H	7	8
20.21.22.23	H	H	L	H	L	7	2.8
24.25.26.27	H	H	L	L	H	7	1.8
28.29.30.31	H	H	L	L	L	7	1.2.8
32.33.34.35	H	L	H	H	H	8	8
36.37.38.39	H	L	H	H	L	8	2.8
40.41.42.43	H	L	H	L	H	8	1.8
44.45.46.47	H	L	H	L	L	8	1.2.8
48.49.50.51	H	L	L	H	H	8.7	8
52.53.54.55	H	L	L	H	L	8.7	2.8
56.57.58.59	H	L	L	L	H	8.7	1.8
60.61.62.63	H	L	L	L	L	8.7	1.2.8
64.65.66.67	L	H	H	H	H	8	8
68.69.70.71	L	H	H	H	L	8	2.8
72.73.74.75	L	H	H	L	H	8	1.8
76.77.78.79	L	H	H	L	L	8	1.2.8
80.81.82.83	L	H	L	H	H	8.7	8
84.85.86.87	L	H	L	H	L	8.7	2.8
88.89.90.91	L	H	L	L	H	8.7	1.8
92.93.94.95	L	H	L	L	L	8.7	1.2.8
96.97.98.99	L	L	H	H	H	8.8	8
100.101.102.103	L	L	H	H	L	8.8	2.8
104.105.106.107	L	L	H	L	H	8.8	1.8
108.109.110.111	L	L	H	L	L	8.8	1.2.8
112.113.114.115	L	L	L	H	H	8.8.7	8
116.117.118.119	L	L	L	H	L	8.8.7	2.8
120.121.122.123	L	L	L	L	H	8.8.7	1.8
124.125.126.127	L	L	L	L	L	8.8.7	1.2.8

EACH FIELD NO. REPRESENTS ONE 32K SEGMENT OF MEMORY
ALL OTHER CONTACTS ON SWITCH PACK 12S AND 9C OPEN
(9C-2 MAY BE CLOSED TO DISABLE APORT)

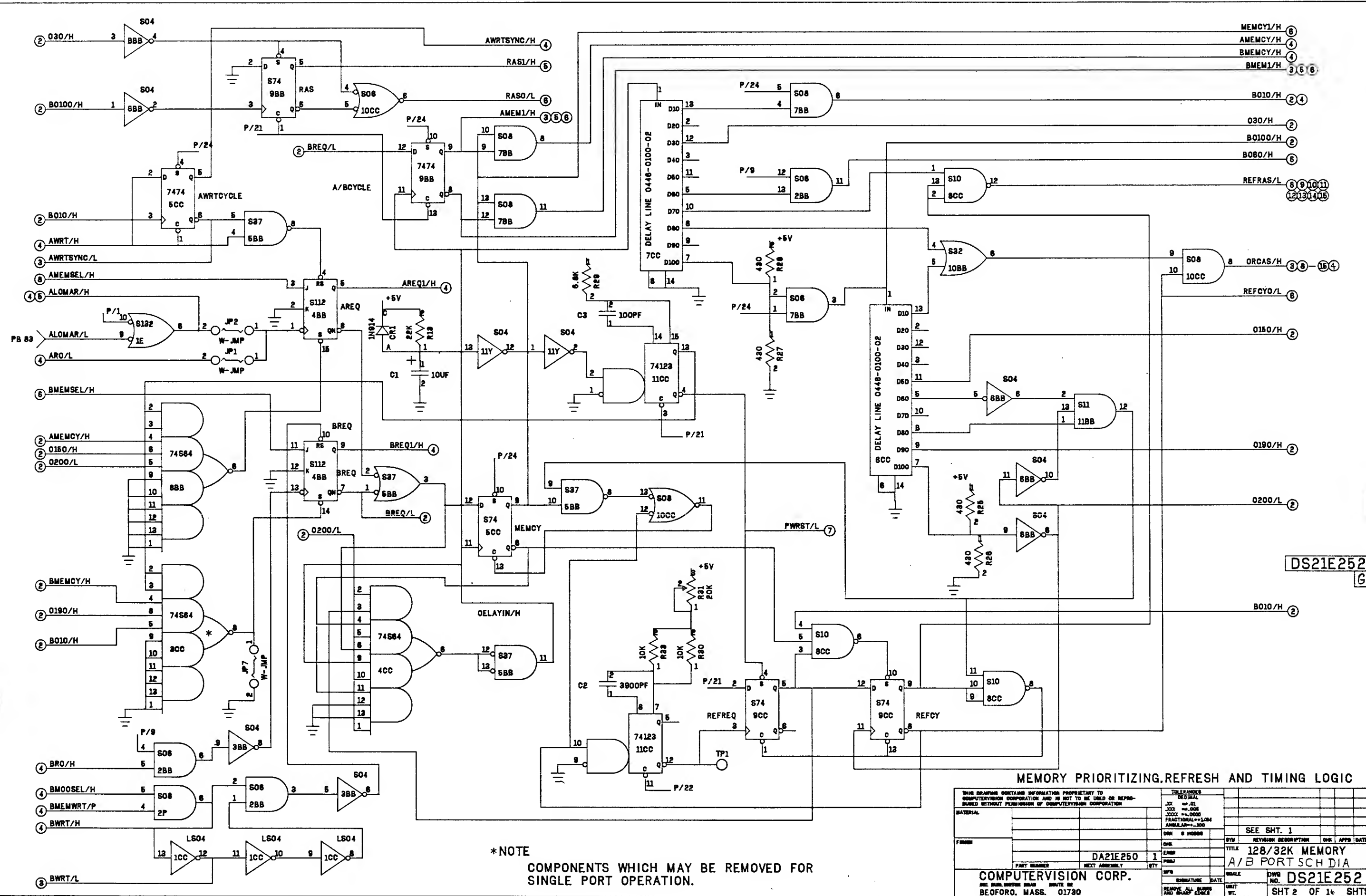
1) DEPOPULATE BOARDS AS PER ASSEMBLY DA21E26D-03

- 1) FOR LOMAR STARTING APORT MEMORY CYCLE INSERT JP-2
- 2) FOR MEMREAD STARTING APORT MEMORY CYCLE INSERT JP-1
- 3) FOR GPU MODE REQUIRING DISABLED APORT .
CLOSE SWITCH 9C-2
- 4) APORT MUG/NON MUG OPERATION

JUMPER PLUG 4D	
MUC OPERATION	1-1
	2-1
	3-1
	4-1
NON MUC OPERATION	5-1
	6-1
	7-1
	8-1

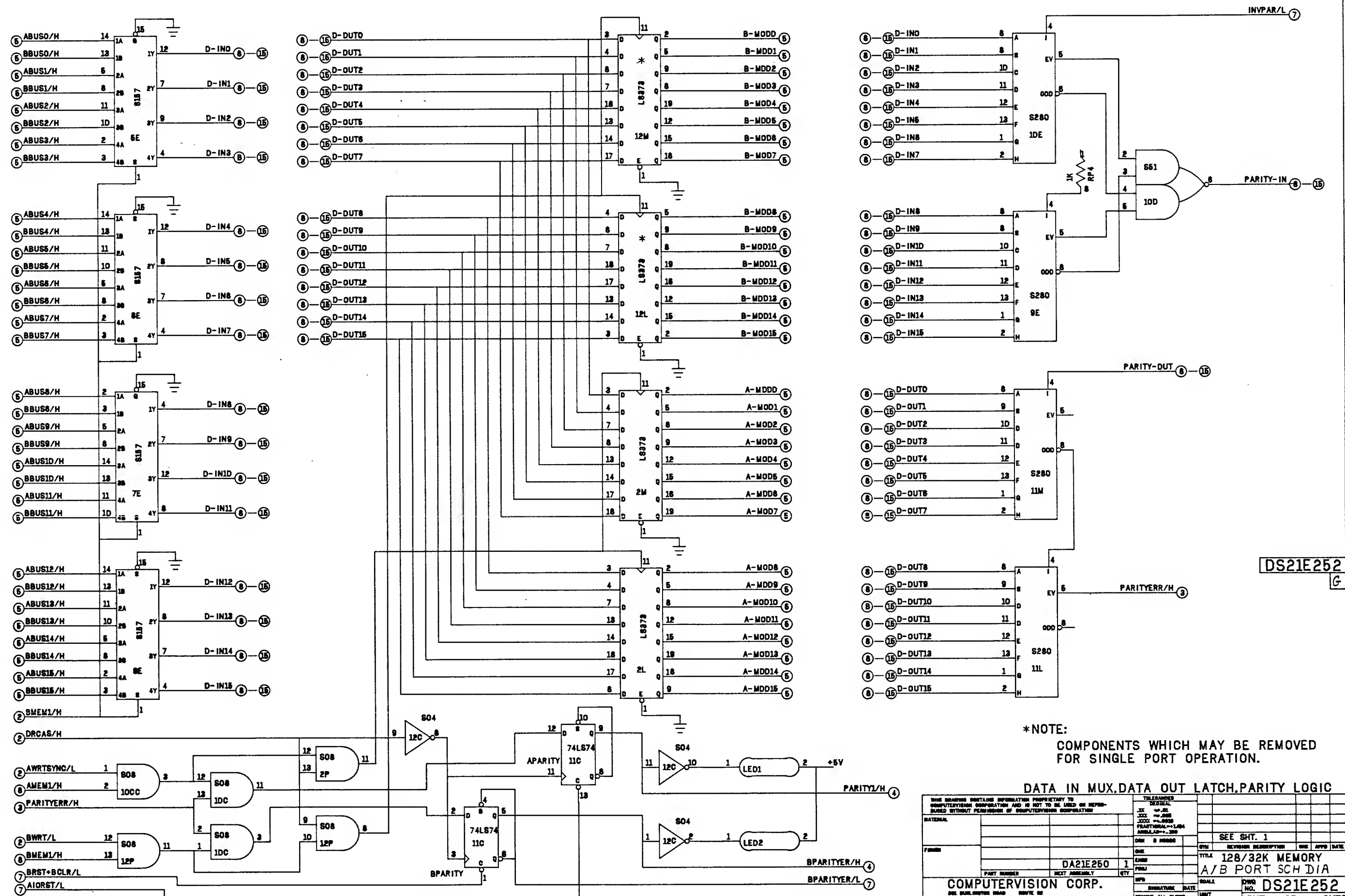
1) STANDARD 24. INSERT JPS FOR 25.

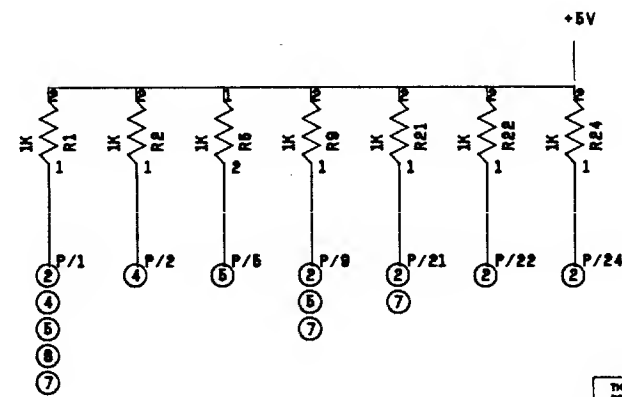
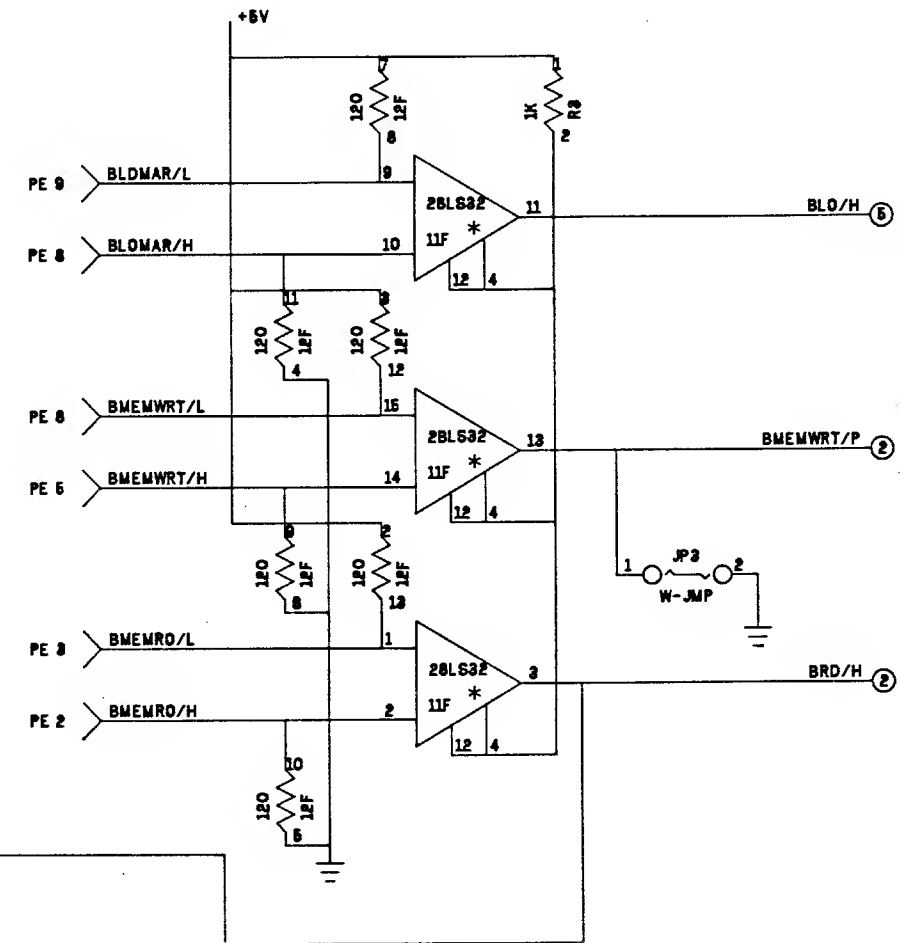
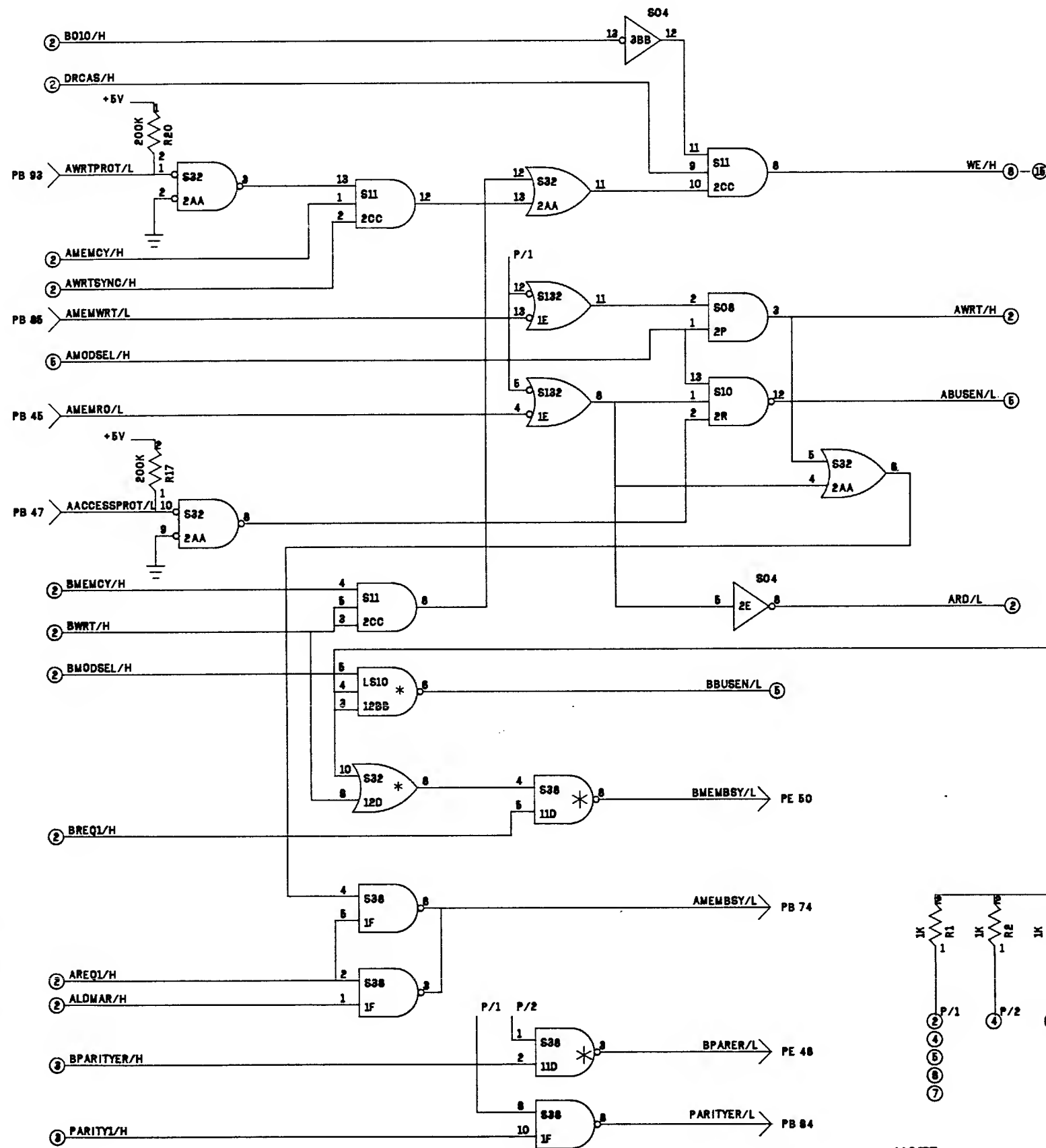
THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION				<table border="1"> <tr> <th colspan="2">TRANSLANCE</th> </tr> <tr> <td>DESKAL</td> <td></td> </tr> <tr> <td>JX == 01</td> <td>G ECC 4019</td> </tr> <tr> <td>JXX == 000</td> <td>F ECC 4016</td> </tr> <tr> <td>JXXX == 0000</td> <td>E ECC 3423</td> </tr> <tr> <td>FRAMTHERMAL == 1.004</td> <td>O ECC 3318</td> </tr> <tr> <td>ANALAL == 1.000</td> <td></td> </tr> <tr> <td>INR 0 NUMBER</td> <td>474</td> </tr> </table>		TRANSLANCE		DESKAL		JX == 01	G ECC 4019	JXX == 000	F ECC 4016	JXXX == 0000	E ECC 3423	FRAMTHERMAL == 1.004	O ECC 3318	ANALAL == 1.000		INR 0 NUMBER	474	<table border="1"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> <td>9</td> <td>10</td> <td>11</td> <td>12</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		1	2	3	4	5	6	7	8	9	10	11	12														
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*NOTE
COMPONENTS WHICH MAY BE REMOVED FOR
SINGLE PORT OPERATION.

TOLERANCES			
RESISTOR	1% .01		
CAPACITOR	1% .001		
INDUCTOR	1% .001		
DIODE	1% .001		
TRANSISTOR	1% .001		
IC	1% .001		
RELAY	1% .001		
SWITCH	1% .001		
CONNECTOR	1% .001		
WIRE	1% .001		
OTHER	1% .001		
SEE SHT. 1			
TITLE 128/32K MEMORY			
A/B PORT SCH DIA			
DWG NO. DS21E252			
SHT 2 OF 16 SHTS			

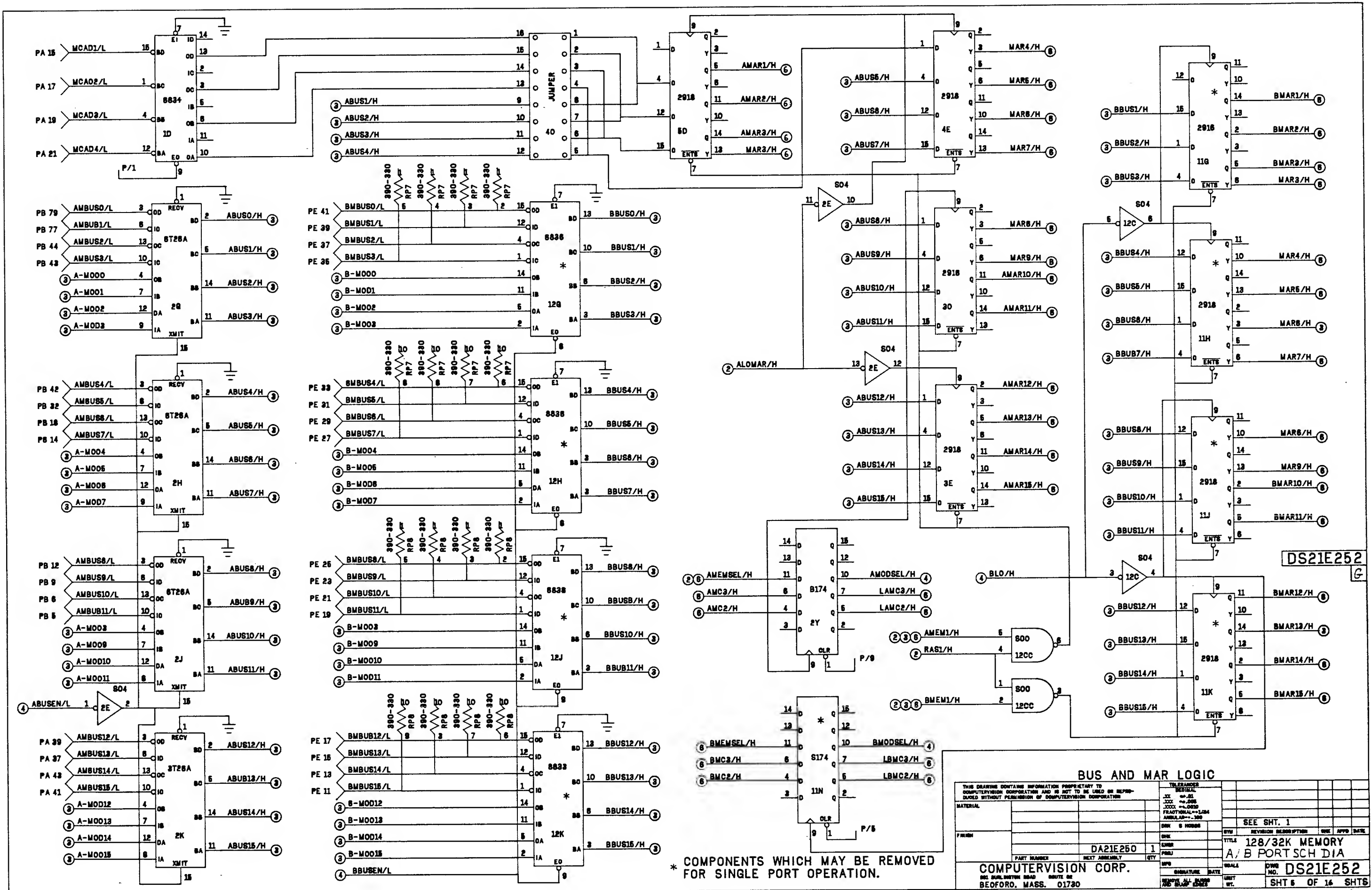




*NOTE:
COMPONENTS WHICH MAY BE REMOVED
FOR SINGLE PORT OPERATION.

DS21E252
G

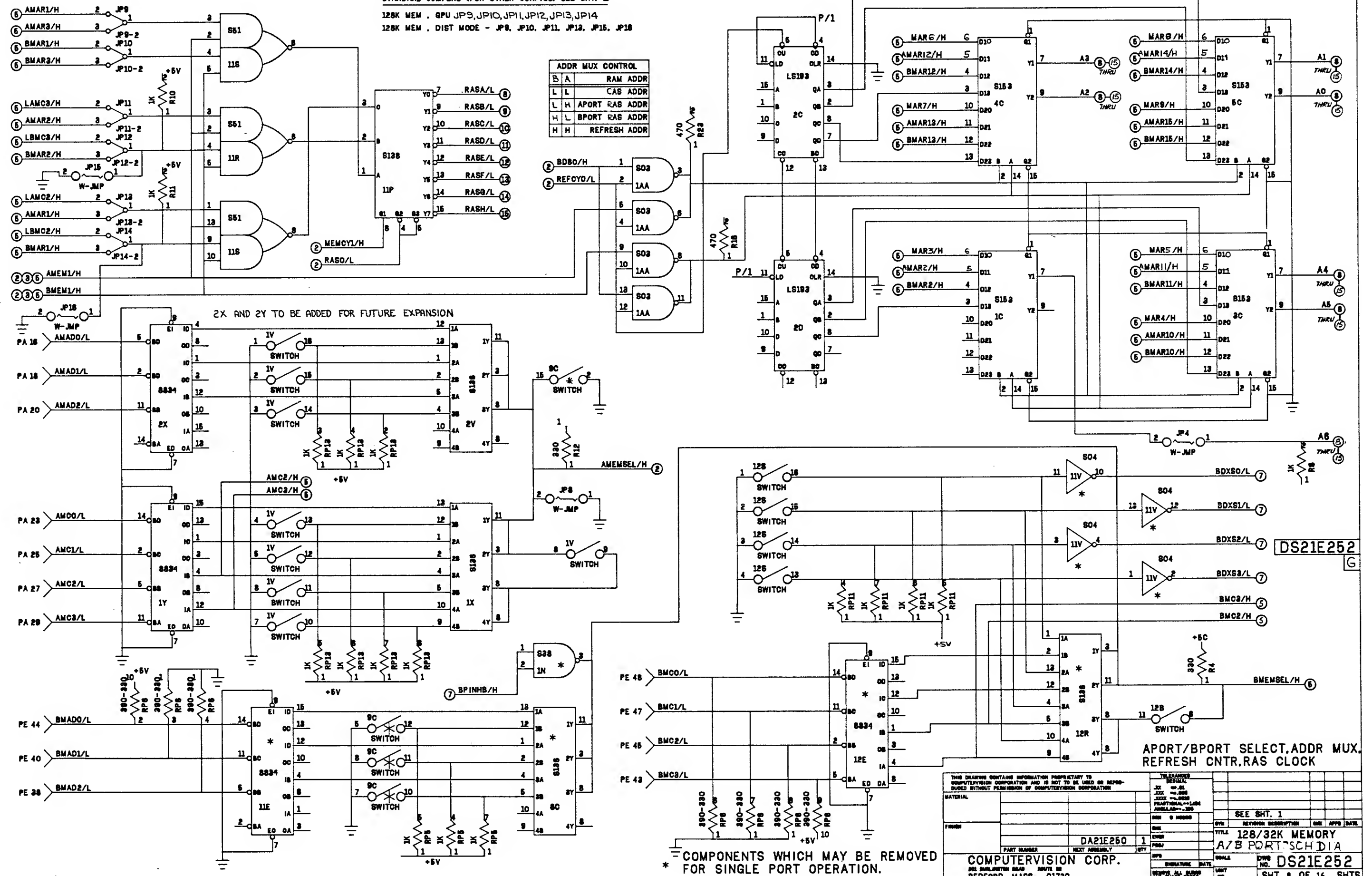
BUS CONTROL LOGIC			
THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION		TOLERANCES DIM. IN INCHES DECIMAL XXX .XX XXXX .XXX FRACTIONAL 1/64 ANGLES 30°-120°	
MATERIAL		QTY	SEE SHT. 1
FINISH		ONE	REVISION DESCRIPTION
	DA21E250	1	ONE
PART NUMBER	NEXT ASSEMBLY	QTY	DATE
COMPUTERVISION CORP.		DWS	
300 BURLINGTON ROAD ROUTE 88 BEDFORD, MASS. 01730		SIGNATURE DATE	
		UNITS	
		SHT 4 OF 16 SHTS	



STANDARD JUMPERS (FOR OTHER CONFIGS. SEE SHT. 1)

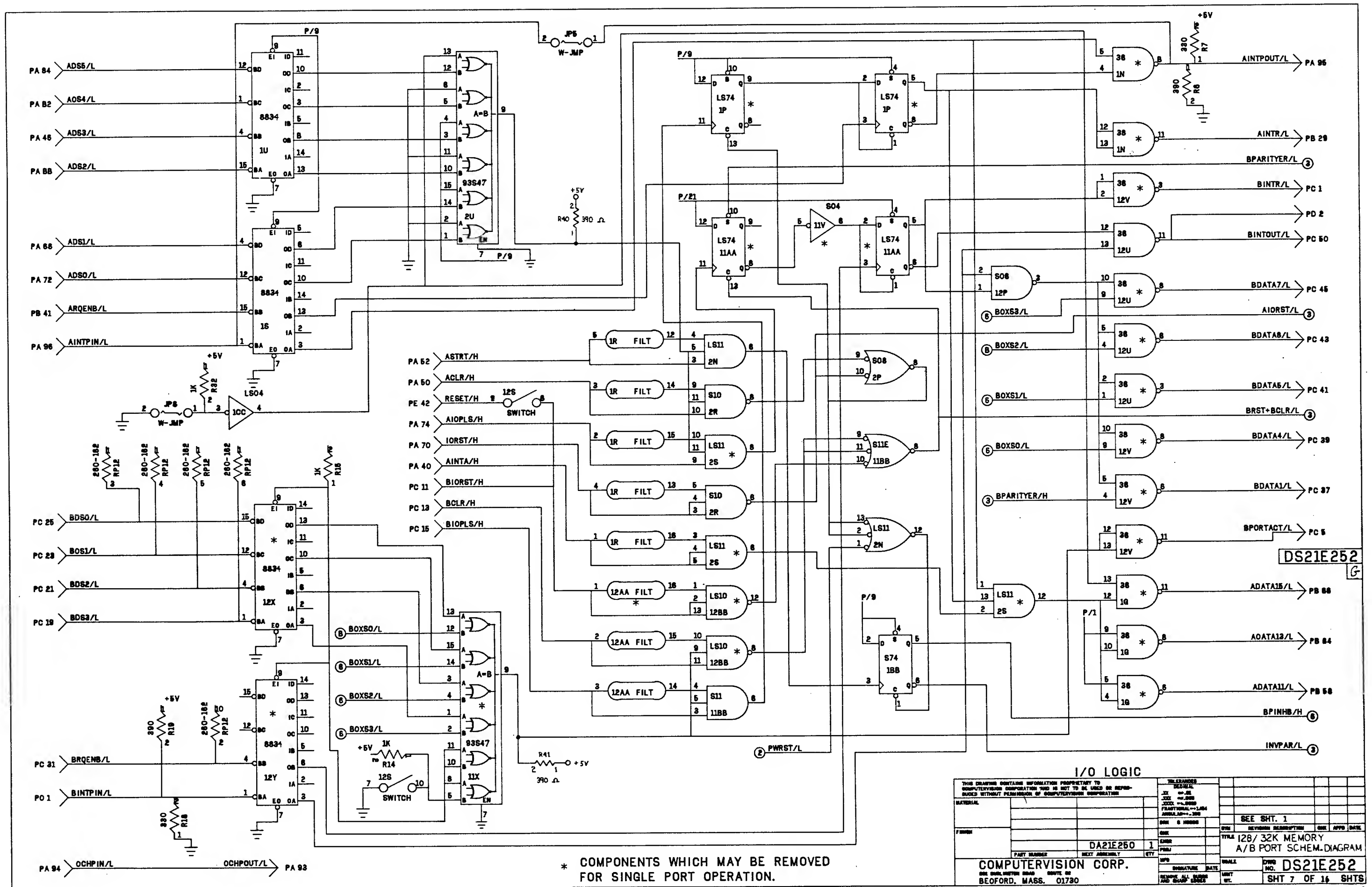
128K MEM. GPU JPS, JPI0, JPI1, JPI2, JPI3, JPI4
128K MEM. DIST MODE - JP9, JP10, JP11, JP12, JP15, JP18

ADDR MUX CONTROL		
B	A	RAM ADDR
L	L	CAS ADDR
L	H	A PORT RAS ADDR
H	L	B PORT RAS ADDR
H	H	REFRESH ADDR

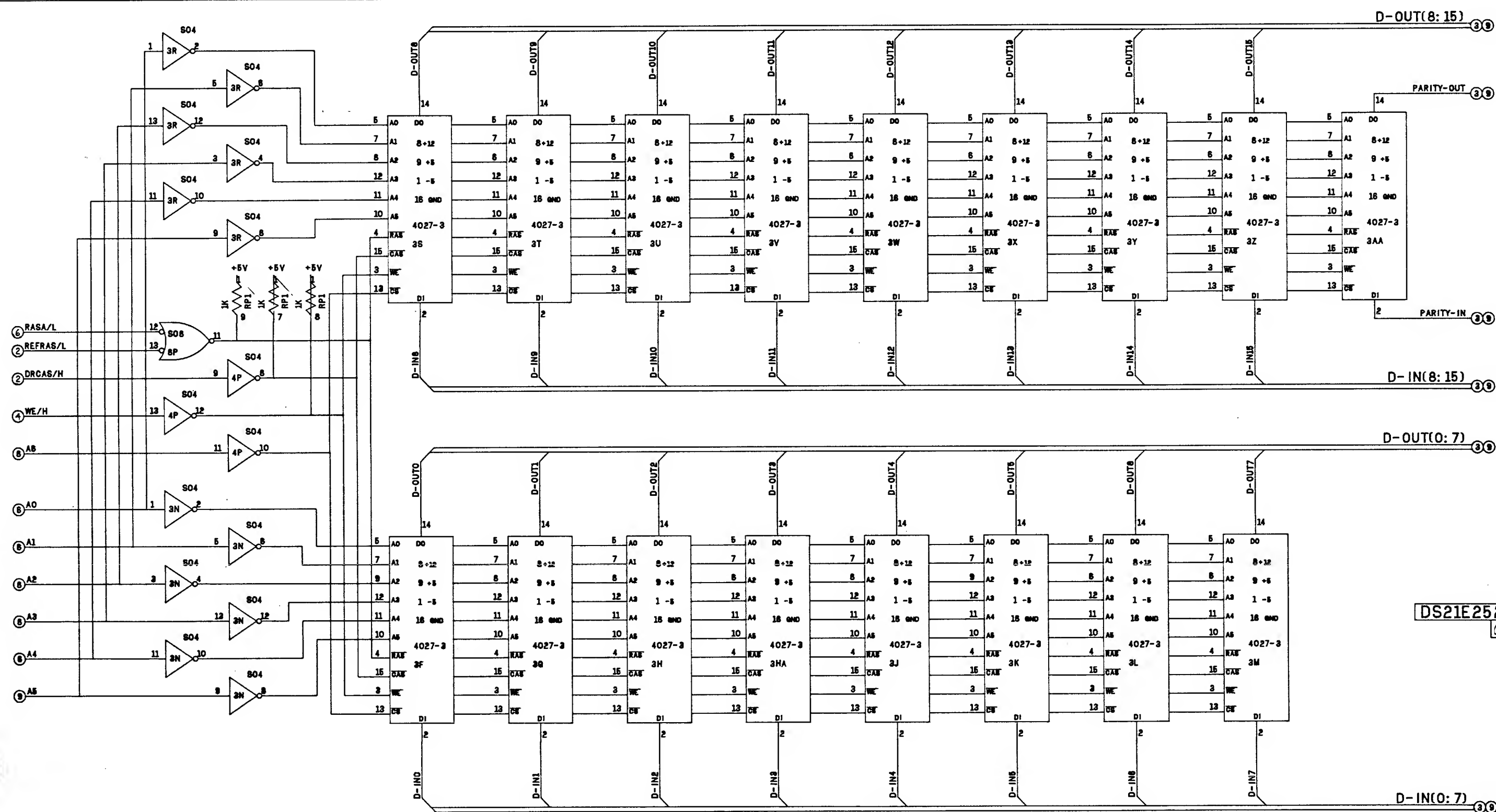


* COMPONENTS WHICH MAY BE REMOVED FOR SINGLE PORT OPERATION.

THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTEVIEW CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTEVIEW CORPORATION		DATE: 10-10-80		BY: J. J. JONES	
MATERIAL:		REV: 1		APP: 1	
PART NUMBER: DA21E250		NEXT ASSEMBLY: 1		QTY: 1	
COMPUTEVIEW CORP.		300 BURLINGTON ROAD		BEDFORD, MASS. 01730	
TITLE: 128/32K MEMORY A/B PORTS CHDIA		SHEET NO. DS21E252		SHT 8 OF 16 SHTS	



I/O LOGIC			
THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION.		REVISED	
MATERIAL		DATE	BY
FINISH		DATE	BY
PART NUMBER		DATE	BY
NEXT ASSEMBLY		DATE	BY
QTY		DATE	BY
COMPUTERVISION CORP.		DATE	BY
ONE BURLINGTON ROAD		DATE	BY
BEOFFORD, MASS. 01730		DATE	BY
DA21E250		DATE	BY
SEE SHT. 1		DATE	BY
TITLE		DATE	BY
128/32K MEMORY		DATE	BY
A/B PORT SCHEM. DIAGRAM		DATE	BY
DS21E252		DATE	BY
SHT 7 OF 16 SHTS		DATE	BY

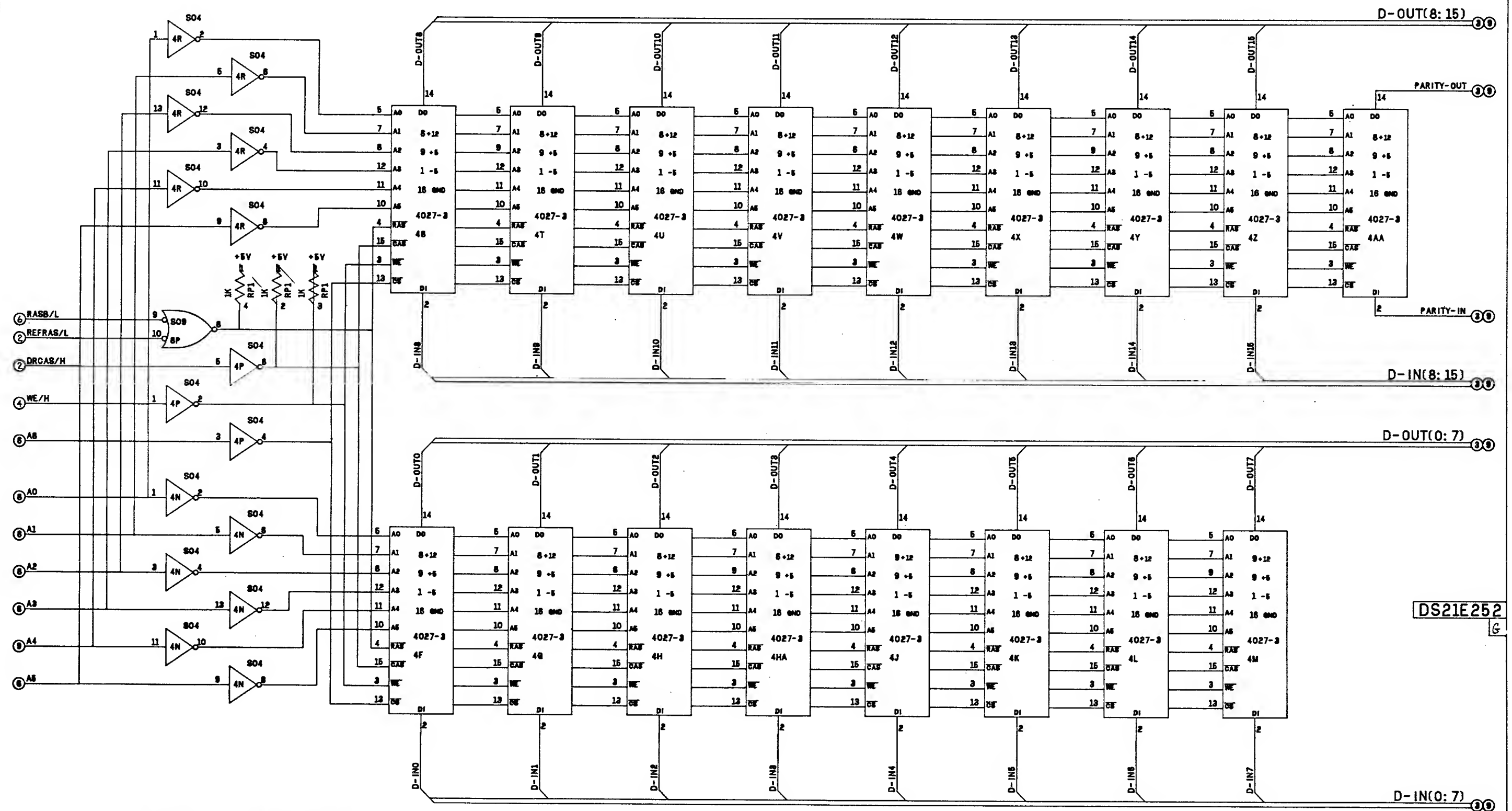


MEMORY CHIPS 3S THRU 3AA
AND 3F THRU 3M MAY BE
EITHER ALL 4027-3 OR
4116-3 PARTS

DS21E252

MEMORY ROW A

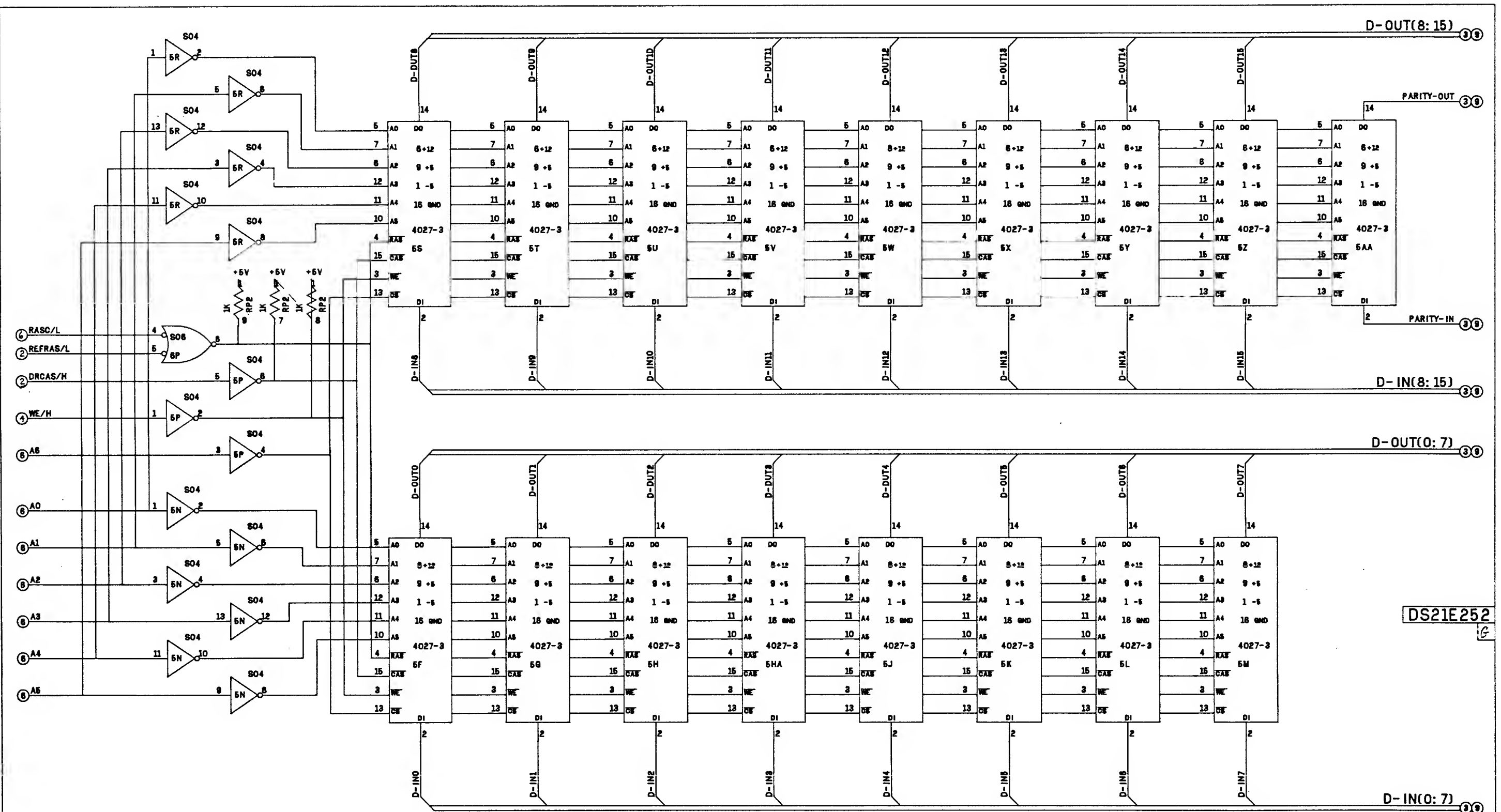
THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION		TOLERANCES UNLESS SPECIFIED XX .XX XXX .XXX XXXX .XXXX FRACTIONAL/1000 ANGULAR/100		REV. 1	
MATERIAL		DATE	BY	CHKD	DATE
FINISH		DATE	BY	CHKD	DATE
PART NUMBER	DA21E250	QTY	1		
COMPUTERVISION CORP. 201 BARKINGTON ROAD BEDFORD, MASS. 01730			SIGNATURE DATE REMOVE ALL MARKS AND SHARP EDGES		
			TITLE 128/32K MEMORY A/B PORT SCHEM. DIAGRAM DS21E252 SHT 8 OF 16 SHTS		



MEMORY CHIPS 4S THRU 4AA
AND 4F THRU 4M MAY BE
EITHER ALL 4027-3 OR
4116-3 PARTS

DS21E252
G

COMPUTERVISION CORP.				MEMORY ROW B			
THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION				REVISED			
DATE: 01/80				REV: 1			
DRAWN BY: J. J. JONES				CHECKED BY: J. J. JONES			
PART NUMBER: DA21E250				QTY: 1			
NEXT ASSEMBLY				DATE: 01/80			
SIGNATURE: J. J. JONES				DATE: 01/80			
REWORK ALL BILLS AND QUOTE SHEET				SHEET 9 OF 14 SHEETS			

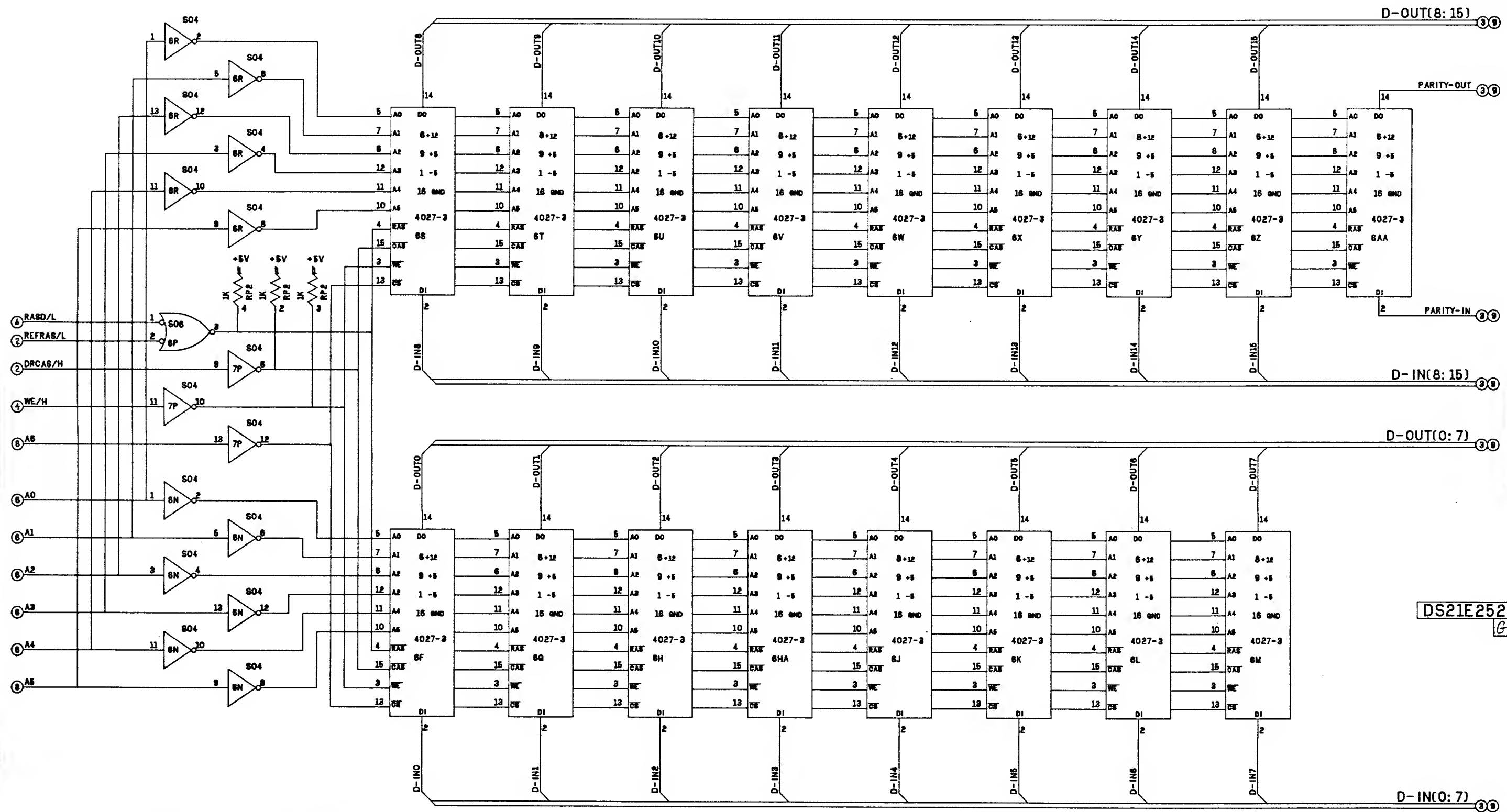


MEMORY CHIPS 5S THRU 5AA
AND 5F THRU 5M MAY BE
EITHER ALL 4027-3 OR
4116-3 PARTS

DS21E252

G

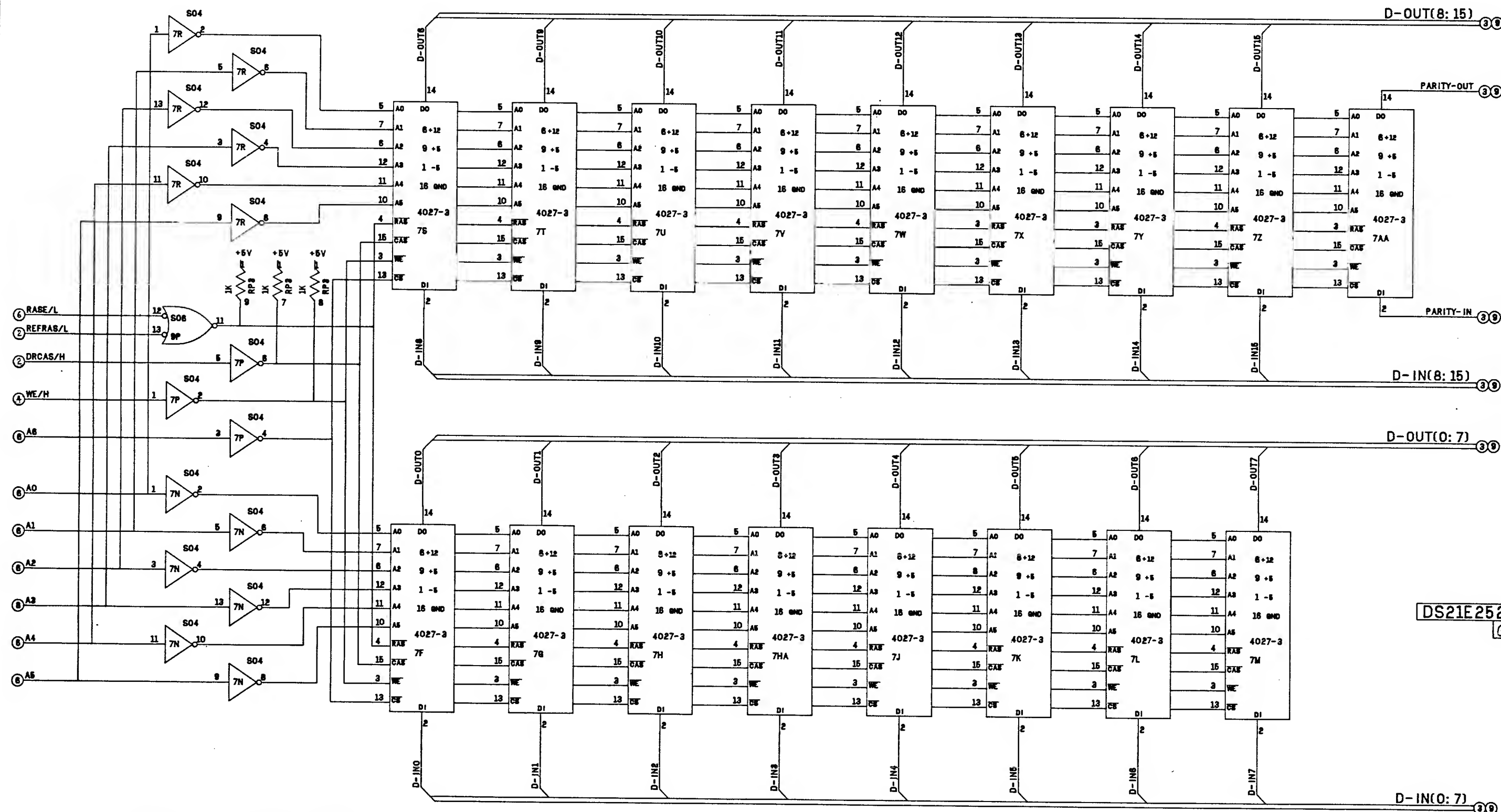
COMPUTERVISION CORP.				MEMORY ROW C			
THIS DRAWING CONTAINS INFORMATION PROPRIETARY TO COMPUTERVISION CORPORATION AND IS NOT TO BE USED OR REPRODUCED WITHOUT PERMISSION OF COMPUTERVISION CORPORATION				TELEPHONE: 617-351-1000 FAX: 617-351-1001			
MATERIAL				SEE SHT. 1			
FINISH				TITLE: 128/32K MEMORY A/B PORT SCHEM. DIAGRAM			
PART NUMBER: DA21E260				REV: 1			
NEXT ASSEMBLY				DATE: 01/79			
COMPUTERVISION CORP.				SHEET NO. 10 OF 16 SHTS			
300 BURLINGTON ROAD, SUITE 200, BEDFORD, MASS. 01730				SHEET NO. 10 OF 16 SHTS			



DS21E252

MEMORY ROW D

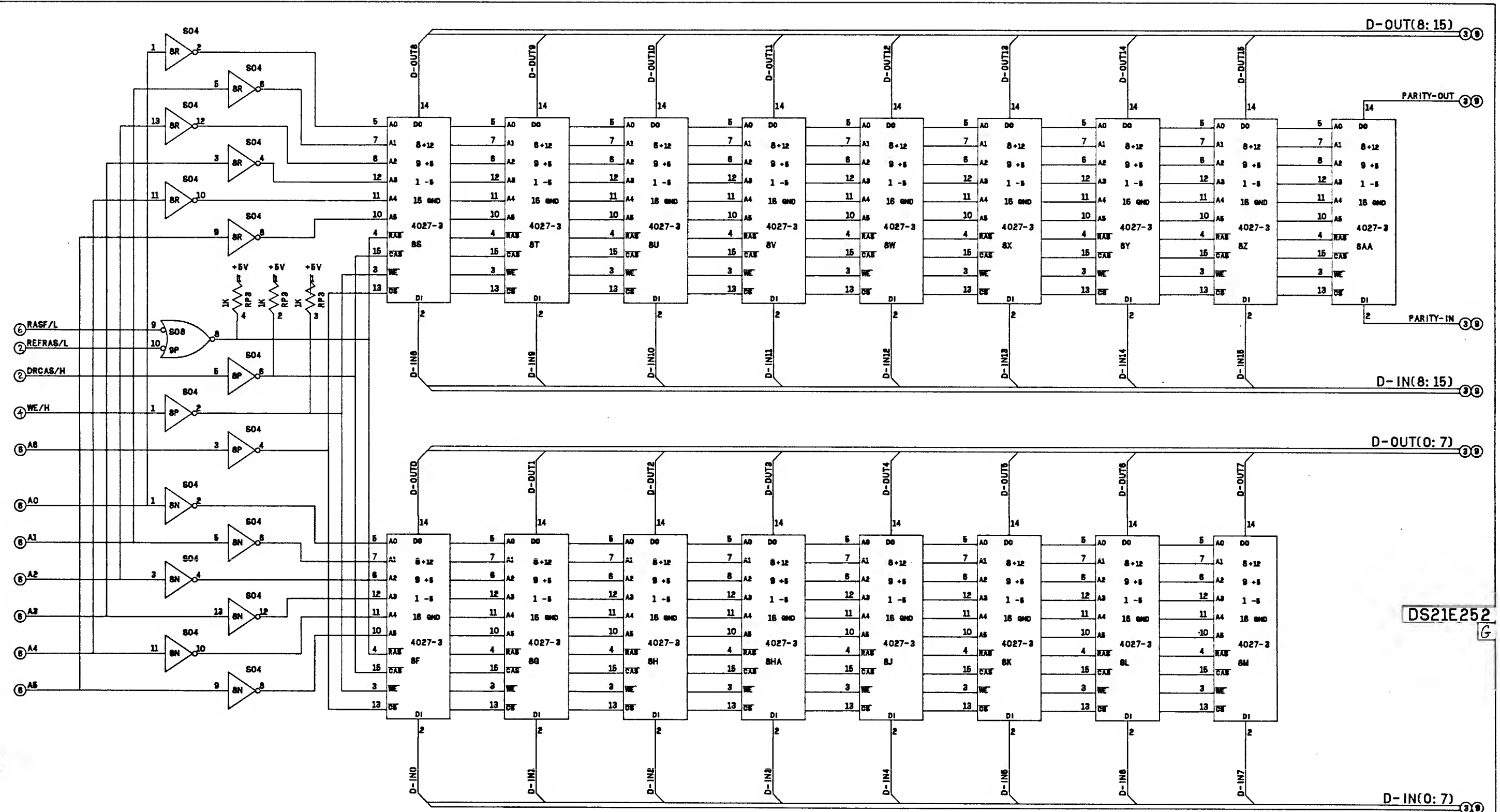
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MATERIAL		REV. 1		REV. 2	
PART NUMBER		REV. 3		REV. 4	
DA21E250		REV. 5		REV. 6	
COMPUTATION CORP.		REV. 7		REV. 8	
BEDFORD, MASS. 01730		REV. 9		REV. 10	
DATE		DATE		DATE	
SHT 11 OF 16 SHTS		SHT 11 OF 16 SHTS		SHT 11 OF 16 SHTS	



MEMORY CHIPS 7S THRU 7AA
AND 7F THRU 7M MAY BE
EITHER ALL 4027-3 OR
4116-3 PARTS

DS21E252
G

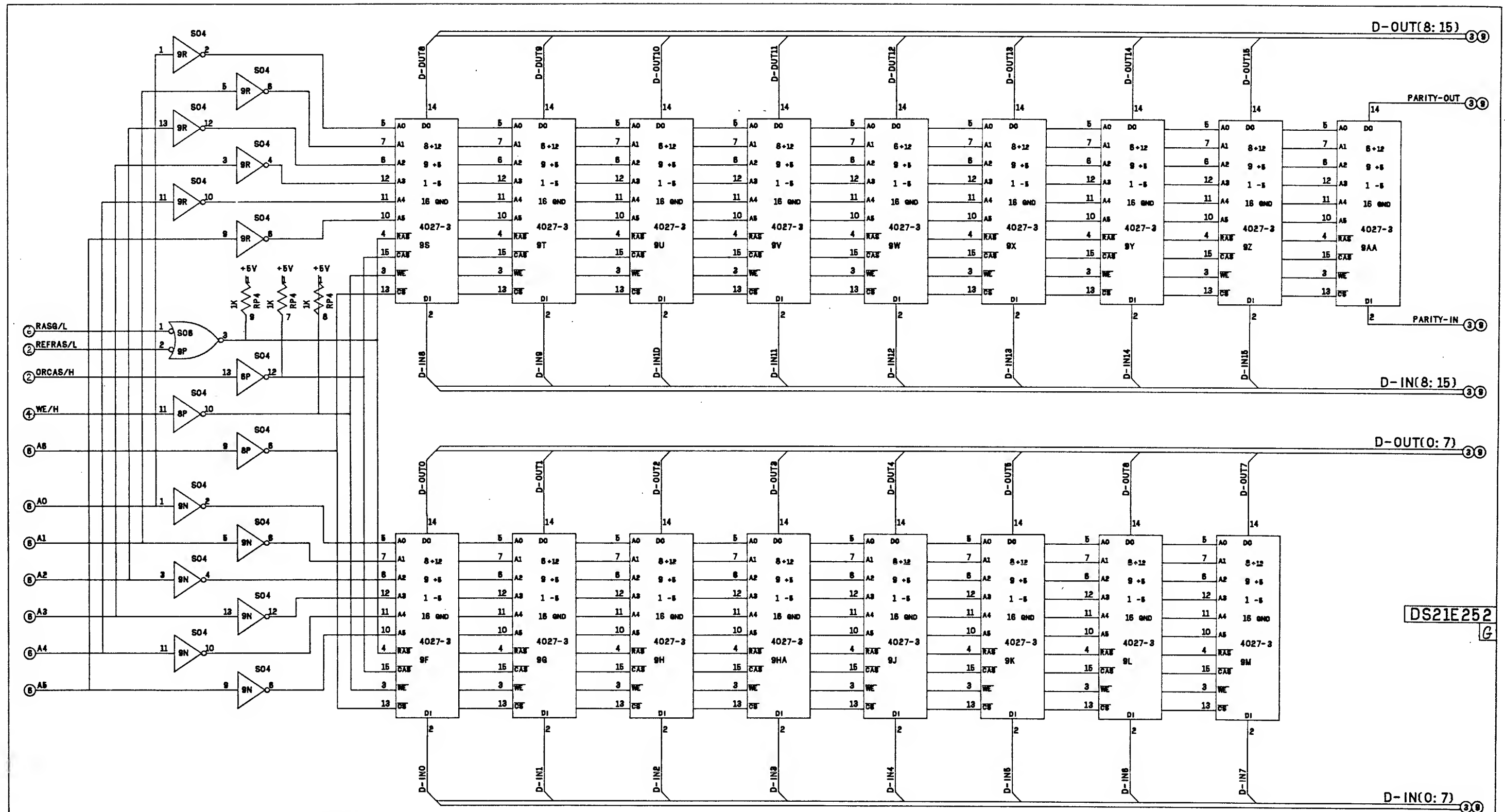
COMPUTERVISION CORP.				MEMORY ROW E			
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MATERIAL				REV. 1			
PART NUMBER				SEE SHT. 1			
DA21E250				TITLE			
COMPUTERVISION CORP.				128/32K MEMORY			
BEDFORD, MASS. 01730				A/B PORT SCH DIA			
DATE				DWG NO.			
SHT 12 OF 16 SHTS				DS21E252			



MEMORY CHIPS 8S THRU 8AA
AND 8F THRU 8M MAY BE
EITHER ALL 4027-3 OR
4116-3 PARTS

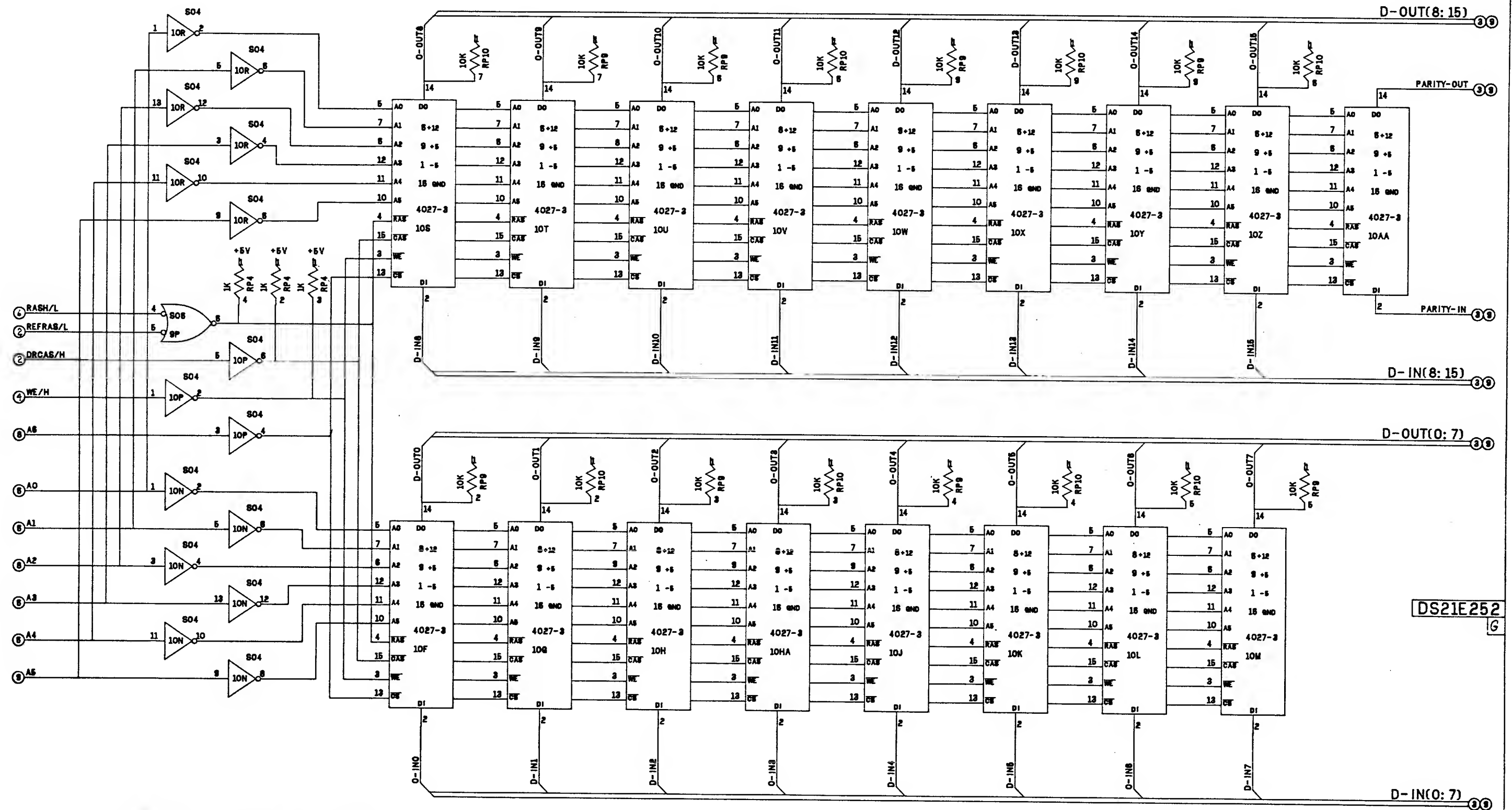
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COMPUTERVISION CORP.				MEMORY ROW F			
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MATERIAL				TITLE 128/32K MEMORY A/B PORT SCH DIA			
FINISH				PART NUMBER DA21E250 1			
NEXT ASSEMBLY				QTY			
COMPUTERVISION CORP.				DWS NO. DS21E252			
100 BEDFORD ST. BEDFORD, MASS. 01730				SHT 13 OF 16 SHTS			



MEMORY CHIPS 9S THRU 9AA
AND 9F THRU 9M MAY BE
EITHER ALL 4027-3 OR
4116-3 PARTS

COMPUTERVISION CORP.				MEMORY ROW G			
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MATERIAL				SEE SHT. 1			
FORM				REV. 1			
PART NUMBER				TITLE			
DA21E250				128/32K MEMORY			
NEXT ASSEMBLY				AZB.FORTSCH.DIA.			
COMPUTERVISION CORP.				NO. DS21E252			
ONE BURLINGTON ROAD BEDFORD, MASS. 01730				SHT 14 OF 16 SHTS			



MEMORY CHIPS 10S THRU 10AA
AND 10F THRU 10M MAY BE
EITHER ALL 4027-3 OR
4116-3 PARTS

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MATERIAL				SEE SHT. 1				DATE			
PART NUMBER				DATE				DATE			
DA21E250				DATE				DATE			
COMPUTERVISION CORP.				DATE				DATE			
SIO FALL RIVER ROAD				DATE				DATE			
BEFORD, MASS. 01780				DATE				DATE			
UNIT				UNIT				UNIT			
SHT 15 OF 16 SHTS				SHT 15 OF 16 SHTS				SHT 15 OF 16 SHTS			

B PORT CONNECTORS

CONN C

1	BINTR	2
3		4
5	BPORTACT	6
7		8
9		10
11	BIOBST	12
13	BCLR	14
15	BIOPL6	16
17		18
19	BDS 3	20
21	BDS 2	22
23	BDS 1	24
25	BDS 0	26
27		28
29		30
31	BRQENB	32
33		34
35	BDATA 10	36
37	BDATA 1	38
39	BDATA 4	40
41	BDATA 5	42
43	BDATA 6	44
45	BDATA 7	46
47	FREE	48
49		50
	BINTPOUT	

CONN E

1		B MEM RD	2
3	B MEM RD		4
5	B MEMWRT	B MEMWRT	6
7		B LDMAR	8
9	B LDMAR		10
11	B MEM BUS 15		12
13	B MEM BUS 14		14
15	B MEM BUS 13		16
17	B MEM BUS 12		18
19	B MEM BUS 11		20
21	B MEM BUS 10		22
23	B MEM BUS 9		24
25	B MEM BUS 8		26
27	B MEM BUS 7		28
29	B MEM BUS 6		30
31	B MEM BUS 5		32
33	B MEM BUS 4		34
35	B MEM BUS 3		36
37	B MEM BUS 2	BWAD2	38
39	B MEM BUS 1	BWAD1	40
41	B MEM BUS 0	RESET	42
43	BMC 3	BWADO	44
45	BMC 2	BWCO	46
47	BMC 1	BPARER	48
49		B MEM BUSY	50

ALL UNUSED PINS GROUNDED

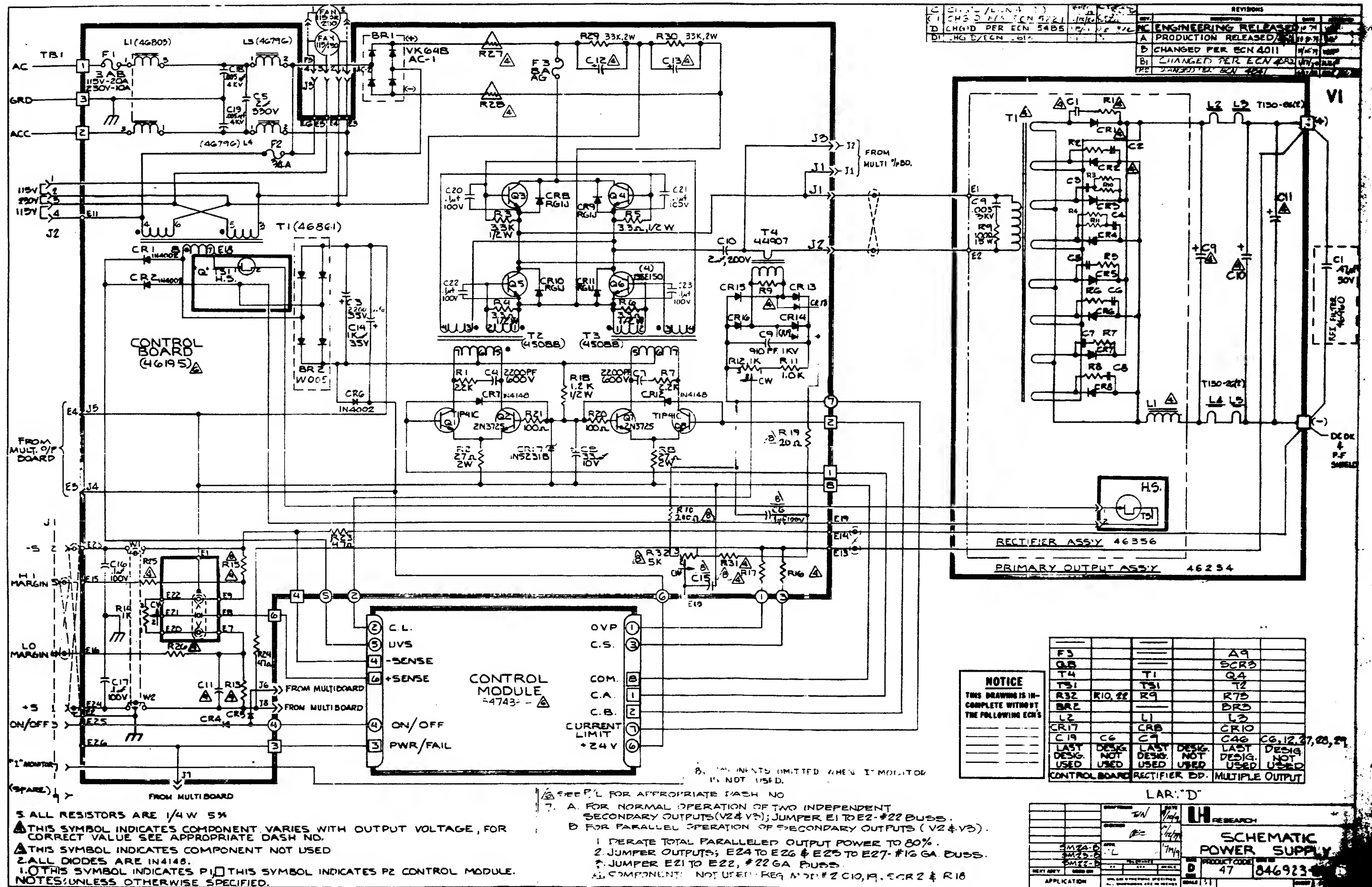
VOLTAGE FEEDS FOR CONNECTORS PA,PB	
+12 VOLTS	B46,A7,A8
+5 VOLTS	B81
-12 VOLTS	B71,B72
+5 VOLTS	A/B3,A/B4,A/B97,A/B98
GND	A/B1,A/B2,A/B99,A/B100

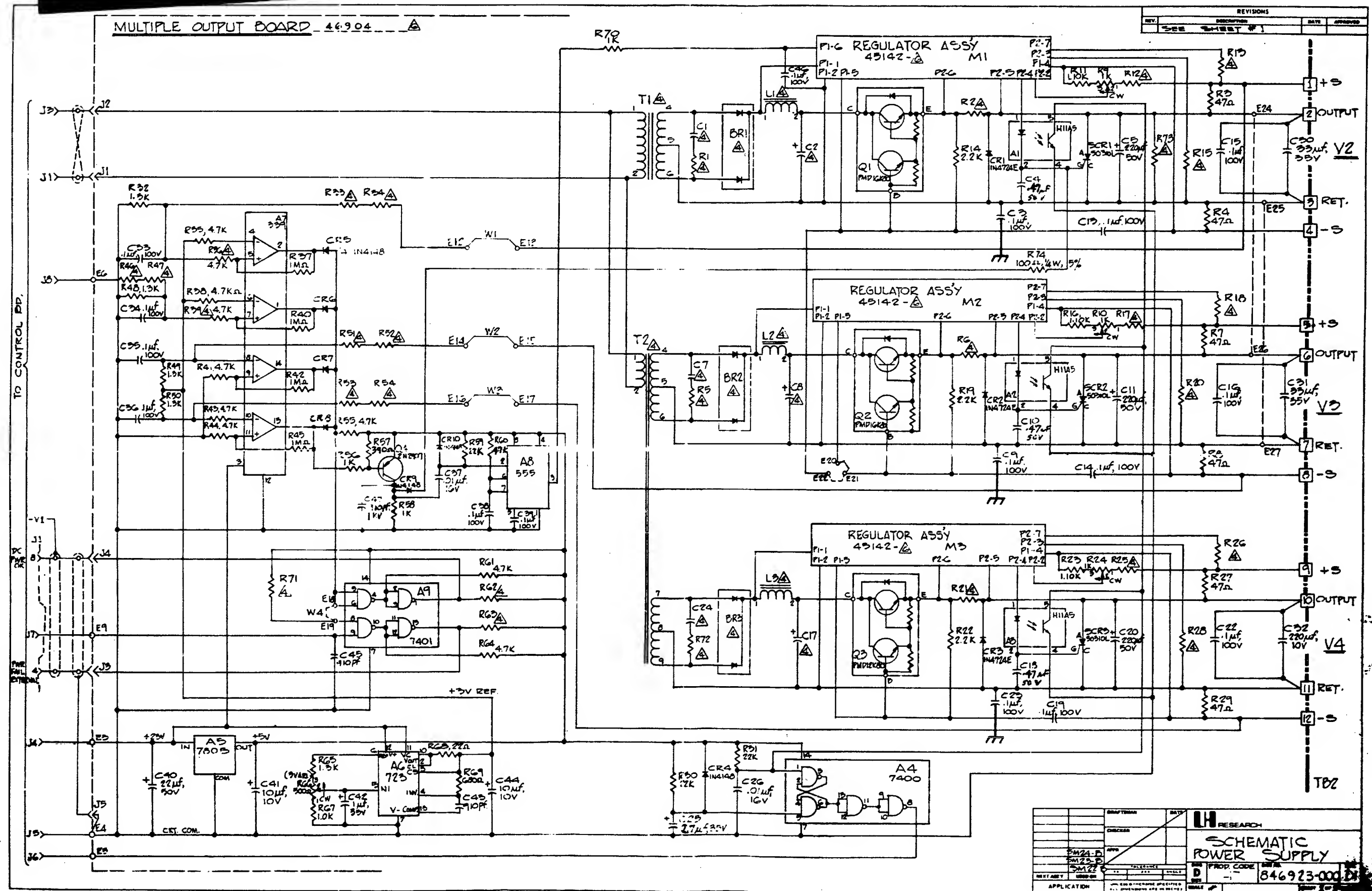
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MATERIAL		DWG NO	REV	DATE	
FINISH		DWG NO	REV	DATE	
PART NUMBER		DA21E250	1	SEE SHT. 1	
NEXT ASSEMBLY					
COMPUTERVISION CORP.		TITLE 128/32K MEMORY			
303 BURLINGTON ROAD ROUTE 08		A/B PORT SCH DIA			
BEDFORD, MASS. 01730		DWG NO. DS21E252			
		SHT 18 OF 16 SHTS			

Power Supply





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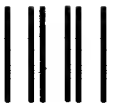
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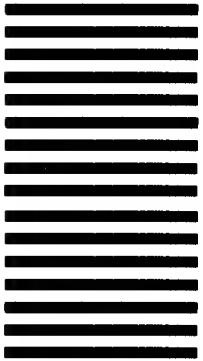
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